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An Abductive Argument from Depression and Anxiety to Christian Personal Holiness

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List of Abbreviations

| | |
|------|---------------------------------------|
| ACC | Anterior Cingulate Cortex |
| ADMs | Antidepressant Medications |
| AsPD | Antisocial Personality Disorder |
| BDNF | Brain-derived Neurotrophic Factor |
| CBT | Cognitive Behavioral Therapy |
| DDS | Degrees of Desirability of a State |
| DNA | Deoxyribonucleic Acid |
| DRH | Degree of Relative Holiness |
| D&A | Depression and Anxiety |
| fMRI | Functional Magnetic Resonance Imaging |
| GAD | General Anxiety Disorder |
| HA | Happy Atheist |
| HC | Happy Christian |
| HPA | Hypothalamic-pituitary-adrenal [Axis] |
| MDD | Major Depressive Disorder |
| MN | Methodological Naturalism |
| MRI | Magnetic Resonance Imaging |
| NFL | No Free Lunch [Theorem] |

| | |
|---------|---|
| PET | Positron Emission Tomography |
| PFC | Prefrontal Cortex |
| PSR | Principle of Sufficient Reason |
| RCBT | Religious Integrated Cognitive Behavioral Therapy |
| RDR | Response to Divine Revelation |
| R/S | Religion and Spirituality |
| SAD | Seasonal Affective Disorder |
| SM | Scientific Materialism |
| SNRIs | Serotonin and Norepinephrine Reuptake Inhibitors |
| SSRIs | Selective Serotonin Reuptake Inhibitors |
| TD-cCBT | Transdiagnostic Computerized Cognitive Behavioral Therapy |
| UA | Unhappy Atheist |
| UC | Unhappy Christian |

Chapter 1

Introduction

Human beings strive for meaning, value, and purpose while seeking the unbounded freedom of autonomy in the pursuit of happiness. Nevertheless, the depravities of disease, destruction, and despair mar existence. “We desire truth and find in ourselves nothing but uncertainty. We seek happiness and find only wretchedness and death. We are incapable of not desiring truth and happiness and incapable of either certainty or happiness.”¹

Depression looms on the horizon for those preoccupied with the perceived evils and injustices of the past, while anxiety erodes peace of mind through the distraction of endless future possibilities. Both depression and anxiety (D&A) may be crippling diseases afflicting individuals of all ages, races, ethnicities, and worldviews. Current scientific research on D&A analyzes the neurocognitive mechanisms of disease, the immunizing and insulatory variables, and the efficacy of treatment modalities.

Can the science unveil the overall solution to the problem of D&A? Or is the answer found in philosophy? Academics seek to span the gulf between the empirical sciences and philosophy by engaging in the study of human flourishing. For the moralist, simply being good and right is sufficient for contentment, never minding the obscurity of defining moral value and obligation standards. Living in harmony with nature is adequate, so says the naturalist. In contrast, all such pursuits of morality and nature are tedious exercises in the futility of meaningful existence for the nihilist. According to Friedrich Nietzsche, “Philosophers and moralists deceive themselves in thinking that they escape from *décadence* by fighting *against* it.

¹ Blaise Pascal, *Pascal's Pensées* (New York, NY: E. P. Dutton & Co., Inc., 1958), 123, http://www.gutenberg.org/files/18269/18269-h/18269-h.htm#SECTION_II.

This is beyond their capacity; and however little they may acknowledge the fact, it subsequently becomes clear that they are among the most powerful promoters of *décadence* [italics in the original].”²

Where secular philosophy fails, Christian theism provides a synthesis of theology and the science on D&A that provides normative and descriptive guidance for the mind, body, and spirit. If Christianity and science are congruent, then the revelatory axioms of God in nature, conscience, the written *logos* (i.e., the Bible), and the living *logos* of Jesus Christ should support the scientific data regarding D&A. Indeed, God’s general revelation subsumes all true science. The goodness and rightness of Christian living (i.e., personal holiness) should therefore provide immunizing and insulating effects against D&A. If religion and spirituality are preventative against and therapeutic for D&A, and Christian theism best explains the science, philosophy, and divine revelation, then the solution for D&A should include personal holiness.

However, scientific discussions on D&A are purely descriptive and cannot justify normative behavior directly. Therefore, chapter two of this monograph emphasizes such descriptivism by examining the neurocognitive mechanisms of D&A, the history of D&A research methodology, and the reported effects of religion and spirituality (R/S) on D&A. The complex neurocognitive mechanisms of D&A are used as part of an abductive argument for theism, while the history of D&A research provides insight into the biases of methodological naturalism and scientific materialism (SM). Finally, the positive effects of R/S on D&A, namely organized religion, community, and spiritual coping techniques, are highlighted.

² Friedrich Nietzsche, *The Will to Power* (London, UK: Penguin Books, 2017), Part 1, Section 435, Google Scholar.

Chapter three analyzes the deductive, inductive, and abductive logic relevant to R/S on D&A to establish the best worldview that explains the descriptive results of chapter two. The metaphysical, philosophical deductions include analysis on Leibnizian contingency, Kalām cosmology, objective morality, teleological fine-tuning of the universe, and abstract conceptualism. The inductive data reflects on the scientific results for R/S on D&A from chapter two. The abductive section then uses a design inference through (1) the complexity of DNA, (2) the insurmountable barrier of the complexity of life for unguided naturalistic processes, (3) the irreducible complexity of intracellular machinery, (4) the improbability of *de novo* folded proteins necessary for life, and (5) the support for common modular design over common ancestry in the nested hierarchy of taxonomy. Using the deductive, inductive, and abductive data, a cumulative argument using inference to the best explanation (abduction) favors theism over all other worldviews for the complexity of life, the subsequent neurocognitive mechanisms of D&A, and the subsumed effects of R/S on D&A.

From the inference of theism, chapter four asserts Christian theism using a minimal facts historical approach. Each personal response to divine revelation as either a virtue or vice relates to the Christian doctrines on the *imago Dei*, divine revelation, divine providence, hamartiology, soteriology, and metaethics. Normative good and right responses to divine revelation provide for benefits of mind, body, and spirit and account for the descriptive results of the science of R/S on D&A. The practice of moralism without belief in God does confer some transitory benefits against D&A, yet overall remains incomplete. Since the Christian standard for good and right behavior is simply a descriptor for holiness, the final solution for the problem of D&A is personal holiness through Jesus Christ.

Chapter 2

On the Science of Depression and Anxiety

Dealing with difficult situations and life stressors is a fact of life for the average individual. The death of a loved one, marital divorce, financial hardship, workplace transitions, and family separations are but a few examples of the devastating events in which the average individual may be involved. Indeed, even the lesser life stressors such as poor performance in school or sport, unfavorable weather, medical illness, and fluctuations in weight may be cumulative or poorly resolved. Such instances may contribute to negative feelings with a low mood and resultant sadness. While a healthy response includes temporary and transient states of depression regarding current or past events, other individuals may continue in their depression, increase in severity, or manifest additional signs and symptoms indicative of a depressive disorder. In summary, depressive disorders are an unhealthy predisposition to current or past situations.

Depressive disorders have a higher incidence in American women than men while afflicting an estimated 264 million people worldwide.³ Symptoms in men tend to differ from women and generally include fatigue, irritability, and anger.⁴ Conversely, the hallmark presentation in women usually includes sadness, low self-worth, and guilt.⁵ Men may manifest more rash behaviors and substance abuse while also failing to recognize their pathological condition.⁶ Childhood depressive disorders are more likely to exhibit school refusals, parental

³ Anxiety and Depression Association of America, "Understand Anxiety & Depression."

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

separation anxiety, and a preoccupation with the potential death of parents.⁷ Teenagers with depressive disorders have a tendency to be ill-tempered and sullen, exhibit dysfunctional behavior at school, and potentially include co-morbidities of pathological anxiety, eating disorders, or substance abuse.⁸ Depressive disorders in the elderly may be more subtle as individuals deny or repress their feelings.⁹

Beyond the impact on the afflicted individual and their families, depressive disorders are economically costly. The total economic expense of depression in the United States from 2005 to 2010 increased 21.5% from \$173.2 billion to \$210.5 billion (in inflation-related dollars).¹⁰ The direct costs of depression in 2010 represent \$98.8 billion (47 percent) of the total estimate to include outpatient (18 percent), inpatient (10 percent), emergency care (2 percent), pharmaceutical care (13 percent), and other medical care (3 percent).¹¹ The suicide-related costs account for \$9.7 billion (5 percent) of the total.¹² The remaining \$102 billion (48 percent) is from workplace costs incurred from the economic losses of absenteeism and presenteeism.¹³

Stressful triggers may also increase trepidation regarding current or future events/performance, consistent with anxiety. In many instances, such forward-thinking may heighten awareness and performance, even improving results (e.g., test-taking, problems at work, sports competitions, life decisions). Pathological anxiety contrasts with this type of healthy

⁷ Anxiety and Depression Association of America, “Understand Anxiety & Depression.”

⁸ Ibid.

⁹ Ibid.

¹⁰ Paul E. Greenberg et al., “The Economic Burden of Adults with Major Depressive Disorder in the United States (2005 and 2010),” *The Journal of Clinical Psychiatry* 76, no. 2 (February 2015), 155, <https://doi.org/10.4088/JCP.14m09298>.

¹¹ Ibid., 159.

¹² Ibid.

¹³ Ibid.

anxiety response. Comparable to the manifestations of depression, the individual with pathological anxiety may have unrelenting anxiety with prolonged duration, increasing severity of anxiety, and additional resultant signs and symptoms with daily distress or dysfunction.

Definitions

Regarding disorders of depression and anxiety, the academic literature generally refers to the various diagnostic definitions. The American Psychiatric Association establishes all definitions for scientific purposes via the *Diagnostic and Statistical Manual of Mental Disorders*. The list of depressive disorders includes major depressive disorder, disruptive mood dysregulation disorder, persistent depressive disorder (i.e., dysthymia), premenstrual dysphoric disorder as a sequela of premenstrual syndrome, substance/medication-induced depressive disorder, secondary depressive disorders due to medical disorders, adjustment disorder with depressed mood, and seasonal affective disorder (SAD).¹⁴

The diagnostic criteria for major depressive disorder (MDD) include five or more symptoms that are persistent for two weeks or more in which at least one of the symptoms is a depressed mood or loss of interest: (1) depressed mood, (2) loss of interest, (3) significant weight fluctuations of more than 5 percent in a month, (4) increase/decrease in appetite, (5) insomnia/hypersomnia, (6) psychomotor agitation/retardation, (7) fatigue, feelings of worthlessness or guilt, (8) diminished cognitive ability, (9) recurrent thoughts of death/dying, or (10) suicidal ideation/attempts with or without a plan.¹⁵ MDD causes significant alterations and deficiencies in subsequent life functioning, including social, occupational, and personal

¹⁴ Anxiety and Depression Association of America, "Understand Anxiety & Depression."

¹⁵ American Psychiatric Association, "Depressive Disorders," *Diagnostic and Statistical Manual of Mental Disorders: DSM-5* (Arlington, VA: 2013), <https://doi.org/10.1176/appi.books.9780890425596.dsm04>.

impairments.¹⁶ Secondary physiological effects of a substance, trauma, or medical condition cannot cause depression (MDD is a primary disorder).¹⁷ MDD has a lifetime prevalence of 16.2 percent and an annual prevalence of 6.6 percent in the United States, with 18- to 29-year-old individuals three times as likely to be afflicted as those age 60 years and older.¹⁸ Females are afflicted at 1.5- to 3-times the rate of males.¹⁹ Anxiety disorders (59.2 percent), impulse control disorders (30 percent), and substance use disorders (24 percent) are reported co-morbidities in 72.1 percent of persons afflicted with MDD.²⁰

Anxiety disorders include generalized anxiety disorder, separation anxiety (most common in childhood), selective mutism, specific phobias, panic disorder, substance/mediation-induced anxiety disorder, and secondary anxiety from other medical conditions.²¹ All anxiety disorders include excessive *fear* as “the emotional response to real or perceived imminent threat” and *anxiety* as the “anticipation of future threat.”²²

The definition of a general anxiety disorder (GAD) includes at least six months of excessive anxiety and worry “for more days than not” regarding numerous life events or activities.²³ Additionally, individuals have three or more symptoms of restlessness, fatigue, cognitive difficulties, irritability, muscular somatic dysfunction, and sleep disturbance.²⁴ Like

¹⁶ American Psychiatric Association, “Depressive Disorders.”

¹⁷ Ibid.

¹⁸ Ronald C. Kessler et al., “The Epidemiology of Major Depressive Disorder: Results from the National Comorbidity Survey Replication (NCS-R),” *Journal of the American Medical Association* 289, no. 23 (June 2003): 3095-3105, <https://doi.org/10.1001/jama.289.23.3095>.

¹⁹ Ibid.

²⁰ Ibid.

²¹ American Psychiatric Association, “Anxiety Disorders.”

²² Ibid.

²³ Ibid.

²⁴ Ibid.

MDD, GAD also results in social, professional, and personal impairments and is not attributable to other secondary substances or conditions.²⁵ As a primary disorder, GAD also excludes anxiety diagnoses “better explained by another mental disorder.”²⁶

For this review, MDD and GAD as primary illnesses will be the focus of interest. Secondary causes of depression and anxiety include infectious, chemical, traumatic, psychosocial, and degenerative pathologies. While these secondary sources of D&A may respond to and benefit from modalities for MDD and GAD, the amelioration of secondary depression is through prevention and treatment of the cause.

Neurocognitive Mechanisms of Depression and Anxiety

With the advent of functional neuroimaging using quantitative structural magnetic resonance imaging (MRI), functional MRI (fMRI), and positron emission tomography (PET), the neurobiology of depression and anxiety has reached new insights. Scientists are no longer restricted to post-traumatic cause/effect models from brain injury, the synthesis of functional deficits and pathological post-mortem analysis, or animal studies. Unlike disorders with genetic aberrations that yield specific phenotypic presentations (e.g., Down syndrome, cystic fibrosis, Huntington disease), mood disorders like MDD and GAD are phenotypic expressions (signs and symptoms) of failed regulations of neural networks from cognitive, emotional, and somatic control processes.²⁷ This dysregulation of functional connectivity represents a conceptual shift in the neurobiology of mood disorders from diseases of neurotransmitters, isolated genes, or neuro-

²⁵ American Psychiatric Association, “Anxiety Disorders.”

²⁶ Ibid.

²⁷ Helen S. Mayberg, “Defining the Neural Circuitry of Depression: Toward a New Nosology with Therapeutic Implications,” *Biological Psychiatry* 61, no. 6 (March 2007): 729-30, <http://doi.org/10.1016/j.biopsych.2007.01.013>.

anatomical foci to a more elaborate systems-based disorder with multi-modal variability from genetic and environmental contributions.²⁸

On a spectrum of mood disorders, the pathological state of depression is the “polar extreme” of mania.²⁹ While depression includes low mood and loss of interest characteristic of MDD, pathological mania exhibits an extreme grandiosity that may include social disinhibition and life-threatening risk-taking with poor insight. This spectrum from depression to mania has two classic psychological models that currently influence today’s scientific theory: the “learned helplessness model” presented by Martin Seligman in 1972 and “Beck’s cognitive model of depression” from 1979.³⁰

Learned helplessness emphasizes a triad of (1) trauma-induced passivity, (2) delayed adaptive learning of any response-relief contingencies, and (3) heightened stress response to uncontrollable trauma versus controllable trauma.³¹ Seligman concludes that “directive therapy” (e.g., literally dragging maladaptive dogs out of a shock box) allows for the *cure/recovery* of learned helplessness while also advocating for *prevention* through “behavioral immunization” via experience in controllable trauma.³²

Beck’s cognitive model of depression similarly describes a “dysfunctional negative schemata” that is “activated by stressful events” with “a characteristic triad of negative thoughts

²⁸ Mayberg, “Defining the Neural Circuitry,” 729.

²⁹ Luke Clark, Samuel R. Chamberlain, and Barbara J. Sahakian, “Neurocognitive Mechanisms in Depression: Implications for Treatment,” *Annual Review of Neuroscience* 32 (July 2009): 59, <https://doi.org/10.1146/annurev.neuro.31.060407.125618>.

³⁰ Ibid.

³¹ Martin E. P. Seligman, “Learned Helplessness,” *Annual Review of Medicine* 23, no. 1 (1972): 408, <https://doi.org/10.1146/annurev.me.23.020172.002203>.

³² Ibid., 409-10.

directed at the self, the world, and the future.”³³ These negative schemata and maladaptations result in afflicted individuals maximizing negativity and minimizing positivity. The goal of Beck’s cognitive-behavioral therapy (CBT) is to retrain an individual’s ability to mentally take captive the negativity and discard the errant thinking in favor of positivity.

A third, more recent, neurocognitive hypothesis for the development of MDD and GAD speculates that “high anxiety trait neuroticism” is an etiological precursor for both anxiety and depressive disorders.³⁴ A genetic polymorphism with a short (S) allele instead of a long (L) allele on the serotonin transporter (5-HTT, SLC6A4) gene is demonstrably and reproducibly associated with a heightened amygdala and hypothalamus-pituitary-adrenocortical (HPA) axis stress response with increased glucocorticoid (i.e., cortisol) levels.³⁵ This hypothesis also supports other findings that suggest anxiety is a primary dose-related (i.e., the severity and number of anxiety disorders are significant) antecedent of depression and may be used to initiate a proactive interventional tool to prevent MDD and GAD.³⁶

As previously stated, a systems-based dysregulation of several anatomical foci frames the neural circuitry involved in mood disorders. The facile concept of a single dysfunction/injury of a specific lobe or gyri of the brain has diminished, eliminating reductionist treatment techniques such as the historical frontal lobotomy and its consequent depersonalization and blunted affect. Mood disorders are changes in the normal regulatory function of the prefrontal cortex and

³³ Clark, Chamberlain, and Sahakian, “Neurocognitive Mechanisms in Depression,” 59.

³⁴ Carmen Sandi and Gal Richter-Levin, “From High Anxiety Trait to Depression: A Neurocognitive Hypothesis,” *Trends in Neurosciences* 32, no. 6 (June 2009): 313, <https://doi.org/10.1016/j.tins.2009.02.004>.

³⁵ *Ibid.*, 317.

³⁶ Antje Bittner et al., “What Characteristics of Primary Anxiety Disorders Predict Subsequent Major Depressive Disorder?” *Journal of Clinical Psychiatry* 65, no. 5 (May 2004): 623, <https://doi.org/10.4088/jcp.v65n0505>.

subgenual anterior cingulate cortex (ACC), subcortical regions in the striatum and thalamus, and temporal lobe to include the amygdala and hippocampus.³⁷

The prefrontal cortex (PFC) is instrumental in executive functions, personality, subjective awareness, and mood. Executive functions of the brain include goal-oriented thought, subjunctive conditional thought and planning (i.e., middle knowledge), and inhibition of thought and emotion.³⁸ The PFC, therefore, plays a role in short-term working memory. Pathologically, chronic stress induces alterations of prefrontal cortical dendrites, specifically a 20 percent decrease in the anterior cingulate region of the medial PFC and a 43 percent increase in the orbital frontal cortex, with a resultant stress-induced attentional impairment that is classically a sign of depression and anxiety.³⁹

The basal ganglia, to include the striatum and thalamus, functions to coordinate other areas of the brain, control voluntary movement, assist in procedural/subcortical learning, promote cognitive thought, and aid in emotion. Regarding mood disorders, the striatum and thalamus, more specifically, are involved in dopaminergic motivation/reward, decision making, and gating for the associative working memory of the prefrontal cortex. Pathology of these areas includes obsessive-compulsive disorder and addiction.⁴⁰

³⁷ Clark, Chamberlain, Sahakian, “Neurocognitive Mechanisms in Depression,” 68.

³⁸ P. S. Goldman-Rakic, “The Prefrontal Landscape: Implications of Functional Architecture for Understanding Human Mentation and the Central Executive,” *Philosophical Transactions of the Royal Society, Series B, Biological Sciences* 351, no. 1346 (October 1996): 1445-53, <https://doi.org/10.1098/rstb.1996.0129>; Joaquín M. Fuster, Mark Bodner, and James K. Kroger, “Cross-Modal and Cross-Temporal Association in Neurons of Frontal Cortex,” *Nature* 405 (May 2000): 347-51, <https://doi.org/10.1038/35012613>.

³⁹ Conor Liston et al., “Stress-Induced Alterations in Prefrontal Cortical Dendritic Morphology Predict Selective Impairments in Perceptual Attentional Set-Shifting,” *Journal of Neuroscience* 26, no. 30 (July 2006): 7870-4, <https://doi.org/10.1523/jneurosci.1184-06.2006>.

⁴⁰ M. J. Frank and R. C. O’Reilly, “A Mechanistic Account of Striatal Dopamine function in Human Cognition: Psychopharmacological studies with Cabergoline and Haloperidol,” *Behavioral Neuroscience* 120, no. 3 (2006):497-517, <https://doi.org/10.1037/0735-7044.120.3.497>.

The human amygdalae are in the inferomedial aspect of the temporal lobe with roles in memory, decision-making, and emotion. Amygdalae exhibit hemispheric specialization with a stimulus of the right influencing negative emotions of fear, anger, and sadness, while the left affects either positive or negative emotions, including happiness, fear, anxiety, and sadness.⁴¹ For social anxiety, obsessive-compulsive disorders, post-traumatic stress, separation and general anxiety, borderline disorder, bipolar disorder, and even psychopathy, amygdalae demonstrate pathological changes in hemispheric size and activity.⁴²

The hippocampus is yet another portion of the temporal lobe implicated in depression and anxiety disorders. This brain locus forms long-term memory, spatial relationships, and conflict processing (e.g., approach-avoidance reward-punishment scenarios).⁴³ MDD specifically results in “robust” memory impairment with substantial “volumetric reductions in the hippocampus” as a direct consequence of stress-related toxicity, most likely due to increased cortisol.⁴⁴

Therefore, the four main domains of functional impairment for mood disorders include executive control, memory, affective processing bias, and feedback sensitivity.⁴⁵ Functional imaging and human pathological studies reveal that in MDD, the executive function issues

⁴¹ Laura Lanteaume et al., “Emotion Induction After Direct Intracerebral Stimulations of Human Amygdala,” *Cerebral Cortex* 17, no. 6, (June 2007): 1310, <https://doi.org/10.1093/cercor/bhl041>.

⁴² Nelson H. Donegan et al., “Amygdala Hyperreactivity in Borderline Personality Disorder: Implications for Emotional Dysregulation,” *Biological Psychiatry* 54, no. 11 (December 2003): 1284-93, [https://doi.org/10.1016/S0006-3223\(03\)00636-X](https://doi.org/10.1016/S0006-3223(03)00636-X); R. J. Blair, “The Amygdala and Ventromedial Prefrontal Cortex: Functional Contributions and Dysfunction in Psychopathy,” *Philosophical Transactions of the Royal Society of London, Series B, Biological Sciences* 363, no. 1503 (August 2008): 2557-65, <https://doi.org/10.1098/rstb.2008.0027>; K. Luan Phan et al., “Association Between Amygdala Hyperactivity to Harsh Faces and Severity of Social Anxiety in Generalized Social Phobia,” *Biological Psychiatry* 59, no. 5 (March 2006): 424-9, <https://doi.org/10.1016/j.biopsych.2005.08.012>.

⁴³ Rutsuko Ito and Andy C. H. Lee, “The Role of the Hippocampus in Approach-Avoidance Conflict Decision-Making: Evidence from Rodent and Human Studies,” *Behavioural Brain Research* 313, no. 15 (October 2016): 345-57, <https://doi.org/10.1016/j.bbr.2016.07.039>.

⁴⁴ Clark, Chamberlain, and Sahakian, “Neurocognitive Mechanisms in Depression,” 62.

⁴⁵ *Ibid.*, 61-6.

localize to the dorsal and lateral PFC, memory impairment to the hippocampus, and processing bias with a preference of negative over positive material to the dysregulation of the PFC, striatum, and amygdalae.⁴⁶ After receiving false feedback, the negative feedback bias of MDD also reveals decreased PFC function and increased amygdalae response compared to healthy controls.⁴⁷ This hypofrontality function manifests in the diminished executive functioning and loss of task-oriented ability with subsequent attenuation of control of the limbic system consistent with the heightened amygdala response.⁴⁸

The memory impairment of MDD and GAD appears to be progressive and cumulative. Using paragraph recall by Gorwood et al. and virtual reality spatial navigation tasks by Gould et al., mnemonic dysfunction testing suggests that memory impairment correlates with the length of illness (chronicity) and is predictive of functional capacity.⁴⁹ Deficits in spatial memory function also correlate with volumetric deficits of the hippocampus that improve with successful therapy providing for the “most robust neuropathological finding reported in MDD.”⁵⁰ Increased cortisol levels in hippocampal function correlate with decreased brain-derived neurotrophic factor (BDNF) and increased precursor proBDNF. This down-regulation of BDNF in conjunction with tropomyosin receptor kinase B (TrkB) favors an increase in proBDNF and pan-neurotrophin receptor 75 (p75NTR) that inhibit long-term potentiation resulting in neuronal cell death and a

⁴⁶ Clark, Chamberlain, and Sahakian, “Neurocognitive Mechanisms in Depression,” 61-6.

⁴⁷ Ibid.

⁴⁸ Ibid., 65.

⁴⁹ Neda F. Gould et al., “Performance on a Virtual Reality Spatial Memory Navigation Task in Depressed Patients,” *The American Journal of Psychiatry* 164, no. 3 (March 2007): 516-9, <https://doi.org/10.1176/ajp.2007.164.3.516>; Philip Gorwood et al., “Toxic Effects of Depression on Brain Function: Impairment of Delayed Recall and the Cumulative Length of Depressive Disorder in a Large Sample of Depressed Outpatients,” *The American Journal of Psychiatry* 165, no. 6 (June 2008), <https://doi.org/10.1176/appi.ajp.2008.07040574>.

⁵⁰ Clark, Chamberlain, and Sahakian, “Neurocognitive Mechanisms in Depression,” 61.

decrease in hippocampal dendritic arborization.⁵¹ This regulatory system explains the balance between BDNF and proBDNF as a “yin-yang neurotrophin hypothesis,” in which BDNF is the reward stimulus and proBDNF is the punishment stimulus for the neurogenesis and pathophysiology affecting the hippocampus in MDD, respectively.⁵²

Affective processing bias is the third domain of common cognitive impairment noted in the pathology of depression and anxiety disorders in which individuals show a preference for the maximization of negativity and the minimization of positivity. This bias is quantitative and qualitative in which positive memories, when recalled, are provided in less detail than negative memories.⁵³ For affective processing issues, testing includes both the affective “go/no-go test” that measures the processing of affect in the presence of inhibitory control and emotional facial recognition testing. Depressed individuals exhibit an impairment at recognizing positive/happy facial expressions, while manic individuals are deficient at recognizing negative/sad facial expressions.⁵⁴ Depressed individuals also have increased responses on fMRI in the subgenual ACC with additional dysregulation of the orbital and medial PFC.⁵⁵ At the same time, the amygdalae consistently show a hyperreactive response to negative emotional faces in pathological depression.⁵⁶ Similar cognitive effects of low mood and biased affective processing are also displayed artificially in healthy individuals through acute tryptophan amino acid

⁵¹ Lu Luo et al., “Effect of Aerobic Exercise on BDNF/proBDNF Expression in the Ischemic Hippocampus and Depression Recovery of Rats After Stroke,” *Behavioural Brain Research* 362, (2019): 323-4, <https://doi.org/10.1016/j.bbr.2018.11.037>.

⁵² Ibid.

⁵³ A. D. Brittlebank et al., “Autobiographical Memory in Depression: State or Trait Marker?” *British Journal of Psychiatry* 162, no. 1 (January 1993): 120, <https://doi.org/10.1192/bjp.162.1.118>.

⁵⁴ Clark, Chamberlain, and Sahakian, “Neurocognitive Mechanisms in Depression,” 63.

⁵⁵ Ibid., 63-4.

⁵⁶ Ibid., 64.

depletion, the precursor for serotonin, supporting a serotonergic regulatory role for affective processing.⁵⁷

The final domain to review regarding depression/anxiety disorders is feedback sensitivity. Individuals with MDD have an amplified response to negative feedback with an increased likelihood of subsequent devastating responses to perceived failure.⁵⁸ This response is exclusive to depression among neuropsychiatric disorders with task deficits.⁵⁹ The anhedonia common in MDD displays attenuations of regular striatal activity in the basal ganglia to positive information and concomitant attenuations of subgenual ACC activity for negative information. These attenuations are consistent with reduced positive feedback and reduced task improvement to negative feedback, respectively.⁶⁰ Feedback sensitivity, like affective, cognitive bias, also responds positively to serotonergic stimulation.⁶¹

The Science on Religion and Spirituality for Depression and Anxiety

While philosophy during the Enlightenment fashions a tortuous path between the spectrum of rationalism and fideism exemplified in the writings of René Descartes, John Locke, Voltaire, Immanuel Kant, Blaise Pascal, and Søren Kierkegaard, science continues in the empirical methods of Aristotle that are refined by the medieval scholasticism of Thomas Aquinas only to give way to the ever-increasing secular academies and universities made popular after Isaac Newton's *Principia* in 1687. Physical observations lead to the theistic deductions of Aquinas. The deism of the Enlightenment then replaces theism. Then deism is later abandoned in

⁵⁷ Clark, Chamberlain, and Sahakian, "Neurocognitive Mechanisms in Depression," 64.

⁵⁸ Ibid.

⁵⁹ Ibid., 64-5.

⁶⁰ Ibid.

⁶¹ Ibid., 66.

favor of Darwinian atheistic materialism as the metaphysical *sine qua non* of secular philosophy that influences methodological naturalism.

Following suit in contemporary thought, late nineteenth and early twentieth-century authors associate religion and spirituality with obsessive disorders, hysterias, and neurosis. Such influences include the neurology of Jean-Martin Charcot, the sociology of Émile Durkheim, the psychoanalysis of Sigmund Freud, and the psychology of Pierre Janet that frames the pathological position of science on religion and spirituality until the late twentieth century. Charcot is the founder of modern neurology with an extensive study on hysteria and hypnosis with many eponyms still in use in modern medicine. Durkheim, in a similar fashion, lays the foundation for modern sociology identifying religion as “a unified system of beliefs and practices relative to sacred things, i.e., things set apart and forbidden—beliefs and practices which unite in one single moral community called a Church, all those who adhere to them.”⁶² While Durkheim explained religion as a means to acquire societal morality, Freud outright declares both religion and neurosis as pathologies of the human mind: “neurosis as an individual religiosity and religion as a universal obsessional neurosis.”⁶³ Pierre Janet attempts to systematize moral-religious conduct through nine levels of “evolution” which progress in complexity from a basic “reflex” reaction to a “genius” or “progressive level” with mental health likened to a monetary system of banking with “budgets,” “expenses,” “receipts,” “poverty,” and “bankruptcy.”⁶⁴ Janet further describes the “god-idea” as “anthropopathic” to meet the needs of

⁶² Emile Durkheim, *The Elementary Forms of the Religious Life*, translated by Joseph Ward Swain (London: George Allen & Unwin Ltd, 1964), 47, <https://www.gutenberg.org/files/41360/41360-h/41360-h.htm>.

⁶³ Volney Patrick Gay, “Psychopathology and Ritual: Freud’s Essay ‘Obsessive Actions and Religious Practises’,” *Psychoanalytic Review* 62, no. 3 (Fall 1975): 493, ProQuest.

⁶⁴ Walter M. Horton, “The Origin and Psychological Function of Religion According to Pierre Janet,” *The American Journal of Psychology* 35, no. 1 (January 1924): 16-52, <https://doi.org/10.2307/1413795>.

individuals through “imitation” to serve a need for a better mental economy, with the mentally rich person remaining healthy while the mentally bankrupt is subject to illness.⁶⁵

Ironically, the reductive ideological bankruptcy of materialism led to a sparsity of academic literature on religion and mental health until a challenge by Larson et al. in 1986.⁶⁶ From 1978 to 1982, only 59 of 2,348 articles (2.5 percent) in the four major psychiatric journals reviewed included a single religious measure.⁶⁷ Larson et al. are therefore particularly critical of psychiatric research at the time given (1) the disparity between the general public, in which 96.25 percent believe in God, and mental health professionals, with 43 percent of psychiatrists and only 5 percent of psychologists adhering to theism; (2) the animosity between the general public and mental health experts concerning religion; and (3) the problem in the “sociology of knowledge” with distortions between the public and professional.⁶⁸ A later systematic review of religion in psychiatry by Larson et al. from 1978 through 1989 of four major psychiatric journals finds 139 religious measures from 35 different studies, with an overall 72 percent of studies reporting a positive relationship of religion on mental health.⁶⁹

After the illuminating critique of such biases of psychiatry, empirical science increasingly examines the religious aspects of mental health. Bonelli and Koenig provide a review of mental disorders, religion, and spirituality from 1990 to 2010, revealing forty-three publications from

⁶⁵ Horton, “The Origin and Psychological Function,” 29.

⁶⁶ Raphael M. Bonelli and Harold G. Koenig, “Mental Disorders, Religion and Spirituality 1990 to 2010: A Systematic Evidence-Based Review,” *Journal of Religion and Health* 52, no. 2 (June 2013): 658, <https://www.jstor.org/stable/24485013>.

⁶⁷ David B. Larson et al., “Systematic Analysis of Research on Religious Variables in Four Major Psychiatric Journals, 1978-1982,” *The American Journal of Psychiatry* 143, no. 3 (March 1986): 332, <https://doi.org/10.1176/ajp.143.3.329>.

⁶⁸ *Ibid.*, 330.

⁶⁹ David B. Larson et al., “Associations Between Dimensions of Religious Commitment and Mental Health Reported in the *American Journal of Psychiatry* and *Archives of General Psychiatry*: 1978-1979,” *The American Journal of Psychiatry* 149, no. 4 (April 1992): 557-9, <https://doi.org/10.1176/ajp.149.4.557>.

the top 25 percent of psychiatry and neurology journals with thirty-one (72.1 percent) with a positive association between religion/spirituality (R/S) and mental health, eight (18.6 percent) with mixed results, and two (4.7 percent) with a negative association.⁷⁰ This study parallels the findings of Larson et al. (1992), with both reporting roughly 72 percent of relevant articles identifying a positive association between religion and mental wellness. The Bonelli and Koenig review also finds 93 percent of studies with at least one positive association and 23 percent with at least one negative while stratifying the results by psychiatric diagnostic groups.⁷¹ Among the positive studies, dementia (n=2), suicide (n=3), and neurosis (n=3) all (100 percent) have positive associations with religion; depression (n=15) and addiction (n=6) have 78.9 and 66.7 percent positive associations respectively; while schizophrenia (n=2) and bipolar (n=0) have 40 percent and 0 percent positive associations respectively.⁷² Of note regarding mood disorders, the studies on bipolar disorder have the lowest average quality score (both QS=5/10) due to methodology, while the highest-quality studies (QS =10, 7, and 9/10) are the three studies on suicide and the beneficial effects of religion.⁷³ In the 2012 second edition of the *Handbook of Religion and Health* by Koenig, King, and Carson, of the thirteen highest-ranked studies from 2000-2012 (QS of 9 or 10/10), eleven identify inverse relationships between R/S and depression (85 percent).⁷⁴ Koenig and company stipulate that “in general, then, the higher quality the study, the more likely an inverse relationship is found between R/S and depression.”⁷⁵

⁷⁰ Bonelli and Koenig, “Mental Disorders, Religion,” 657.

⁷¹ Ibid., 664.

⁷² Ibid., 663.

⁷³ Ibid., 666.

⁷⁴ Harold G. Koenig, Dana E. King, and Verna B. Carson, *Handbook of Religion and Health*, 2nd ed. (New York: Oxford University Press, 2012), 150, ProQuest.

⁷⁵ Ibid.

Granted that most studies on mood disorders are cross-sectional in design, Miller et al. in 2012 provided the first ten-year prospective study on R/S and major depression in adults at high risk.⁷⁶ While the study limitations include sample size, religious denominations of Catholic and Protestant, and ethnicity due to the locale, this study suggests the long-term effect of the subjective view of “high personal importance” of religion with a 76 percent reduction in the recurrence of major depression. In an editorial review of the Miller et al. article, Dan Blazer, MD offers three conclusions of contemporaneous academic literature: (1) “individuals with no religious affiliation are at greater risk for depressive symptoms and disorders,” (2) “people involved in their faith communities may be at reduced risk for depression,” and (3) “private religious activities and beliefs are not strongly related to risk for depression” (as opposed to organizational or community religious activities).⁷⁷ Blazer continues by citing “a short list” on the difficulties of measuring “such a nebulous topic as religion or spirituality” that includes religious belief or nonbelief, organizational religiosity (e.g., member of a faith community or church), nonorganizational religiosity (e.g., prayer, reading Scripture, professions of faith), and subjective religiosity (e.g., religious fervor, spiritual well-being).⁷⁸

A variety of additional dimensions support the positive association of R/S and mental health. Concordance of religious denomination between mother and offspring is associated with a 71 percent reduction in risk for MDD in the adult offspring after a longitudinal 10-year study.⁷⁹

⁷⁶ Lisa Miller et al., “Religiosity and Major Depression in Adults at High Risk: A Ten-Year Prospective Study,” *The American Journal of Psychiatry* 169, no. 1 (January 2012): 89-94, <https://doi.org/10.1176/appi.ajp.2011.10121823>.

⁷⁷ Dan Blazer, “Religion/Spirituality and Depression: What Can We Learn from Empirical Studies?” *The American Journal of Psychiatry* 169, no. 1 (January 2012): 10, <https://doi.org/10.1176/appi.ajp.2011.11091407>.

⁷⁸ *Ibid.*, 11.

⁷⁹ Lisa Miller et al., “Religiosity and Depression: Ten-Year Follow-up of Depressed Mothers and Offspring,” *Journal of the American Academy of Child & Adolescent Psychiatry* 36, no. 10 (October 1997): 1421, <https://doi.org/10.1097/00004583-199710000-00024>.

“Religious coping,” as identified by Koenig et al. to include “trust or faith in God, prayer, Bible reading, and strong church relationships,” also provides another dimension that is inversely related to depression in elderly hospitalized men in a Virginia VA hospital.⁸⁰ Significant variables include black race, older age, retired work status, religious affiliation, high level of social support, infrequent use of alcohol, prior history of psychiatric problems, and higher cognitive functioning. In a later prospective outcome study by Koenig et al., “intrinsic” [subjective] religiosity also supports improved coping mechanisms while independently predicting a shorter time to remission for medically ill hospitalized elderly patients diagnosed with MDD or episodic depression.⁸¹ In a meta-analysis by Smith, McCullough, and Poll, 146 independent investigations (n=98,975) reveal religiousness, in general, provides a “robust” yet “modest” positive effect on depressive symptoms.⁸² Finally, goal-striving stress, defined as stress acquired from the gap between aspirations and achievement, is associated with lower self-esteem and personal mastery.⁸³ However, perceived divine control improves self-esteem while further diminishing personal mastery in deference to a deity.

Regarding suicide as a hallmark of depression, the data suggest an inverse relationship between R/S and suicidal ideation. Those identifying as either “spiritual” or in “religious attendance” are more insulated than the nonreligious from attempted suicide (0.47 percent versus

⁸⁰ Harold G. Koenig et al., “Religious Coping and Depression Among Elderly, Hospitalized Medically Ill Men,” *The American Journal of Psychiatry* 149, no. 12 (December 1992): 1697-1700, <https://doi.org/10.1176/ajp.149.12.1693>.

⁸¹ Harold G. Koenig, Linda K. George, and Bercedis L. Peterson, “Religiosity and Remission of Depression in Medically Ill Older Patients,” *The American Journal of Psychiatry* 155, no. 4 (April 1998): 540-1, <https://doi.org/10.1176/ajp.155.4.536>.

⁸² Timothy B. Smith, Michael E. McCullough, and Justin Poll, “Religiousness and Depression: Evidence for a Main Effect and the Moderating Influence of Stressful Life Events,” *Psychological Bulletin* 129, no. 4 (2003): 626, <https://doi.org/10.1037/0033-2909.129.4.614>.

⁸³ Reed T. DeAngelis, “Goal-striving Stress and Self-concept: The Moderating Role of Perceived Divine Control,” *American Sociological Association* 8, no. 2 (2018): 151, <https://doi.org/10.1177/2156869317717767>.

0.83 percent).⁸⁴ Those identifying as nonreligious have significantly higher rates of suicide attempts, more first-degree relatives that commit suicide, and struggle more metaphysically with questions of self-purpose with fewer perceived reasons for living and fewer moral objections to suicide than those identifying as religious regardless of denominational affiliation.⁸⁵ The nonreligious also suffer more from an increase in impulsivity, aggression, and history of substance abuse.⁸⁶

Scientific Treatments for Depression and Anxiety

The scientific literature lists numerous treatment options for depression and anxiety disorders. Pharmacological intervention with antidepressant medications (ADMs) and evidence-based psychotherapies that include cognitive-behavioral therapy (CBT) and interpersonal therapy are the mainstays of therapy. More experimental modalities include cognitive-enhancing drugs, electroconvulsive therapy, transcranial magnetic stimulation, and deep brain stimulation.⁸⁷

Regarding ADMs, first-line interventional pharmacotherapy includes selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) with effects at specific neural synapses, thereby providing an augmented effect of these respective neurotransmitters. After the first week, significant symptomatic improvement of MDD has been found, with a further diminishing rate of improvement for at least six weeks.⁸⁸ Functional

⁸⁴ Daniel T. Rasic et al., "Spirituality, Religion, and Suicidal Behavior in a Nationally Representative Sample," *Journal of Affective Disorders* 114, no. 1-3 (April 2009): 32-40, <https://doi.org/10.1016/j.jad.2008.08.007>.

⁸⁵ Kanita Dervic et al., "Religious Affiliation and Suicide Attempt," *The American Journal of Psychiatry* 161, no. 12 (December 2004): 2303-8, <https://doi.org/10.1176/appi.ajp.161.12.2303>.

⁸⁶ Bonelli and Koenig, "Mental Disorders, Religion," 666.

⁸⁷ Clark, Chamberlain, and Sahakian, "Neurocognitive Mechanisms in Depression," 67.

⁸⁸ Matthew J. Taylor et al., "Early Onset of Selective Serotonin Reuptake Inhibitor Antidepressant Action: Systematic Review and Meta-Analysis," *Archives of General Psychiatry* 63, no. 11 (November 2006): 1217, <https://doi.org/10.1001/archpsyc.63.11.1217>.

neuroimaging identifies physical brain changes from pharmaceuticals as well. The left amygdala may increase in size after pharmacotherapy with SSRIs or psychotherapy.⁸⁹ However, in the large STAR*D study (n=2876) after up to fourteen weeks of the SSRI citalopram, remission rates for MDD were only 28 percent using the Hamilton Depression Rating Scale (HAM-D) and 33 percent using the Quick Inventory of Depressive Symptomatology, Self-Report (QIDS-SR) with an overall response rate of 47 percent (based on a ≥ 50 percent reduction in the baseline QIDS-SR score).⁹⁰ Additionally, the side effect profile of long-term and frequent use of all classes of ADMs includes increased risk of bone fractures, postural hypotension, cardiovascular and cerebrovascular incidents, gastrointestinal hemorrhage, epilepsy, and suicide risk.⁹¹ The STAR*D results coupled with the common side effects of these drugs challenge medication use as both a single and first-line therapy.

With the academic and practical limitations of pharmacotherapy for anxiety and depressive disorders due to low remission/response and noncompliance, psychotherapy techniques have increased in prevalence. Psychotherapy is now the first-line treatment either as a single or combined/multi-modality approach.⁹² CBT, a specific type of psychotherapy, teaches individuals to recognize and challenge negative beliefs and thinking, substitutes positive schemata for the negative and provides alternative coping methods for the rigors of daily life. In

⁸⁹ J. Archart-Treichel, "Changes in Children's Amygdala Seen After Anxiety Treatment," *Psychiatric News* 40, no. 9 (May 2005): 37, <https://doi.org/10.1176/pn.40.9.00400037>.

⁹⁰ Madhukar H. Trivedi et al., "Evaluation of Outcomes with Citalopram for Depression Using Measurement-Based Care in STAR*D: Implications for Clinical Practice," *The American Journal of Psychiatry* 163, no. 1 (January 2006): 28, <https://doi.org/10.1176/appi.ajp.163.1.28>.

⁹¹ Carol Coupland et al., "Antidepressant Use and Risk of Adverse Outcomes in People Aged 20-64 Years: Cohort Study Using a Primary Care Database," *BMC Medicine* 16, no. 36 (2018): 21, <https://doi.org/10.1186/s12916-018-1022-x>.

⁹² Stephen Pilling et al., "Identification and Care Pathways for Common Mental Health Disorders: Summary of NICE guidance," *BMJ* 342 (May 2011): 1-5, <https://doi.org/10.1136/bmj.d2868>.

a meta-analysis from 2010, “CBT outperforms other forms of psychotherapy” and therefore should be considered first-line therapy.⁹³ CBT and SSRIs similarly demonstrate reduced metabolism of the pathologically hyperactive orbitofrontal cortex and medial PFC for those with mood disorders responding to treatment.⁹⁴ Then in 2015, Pearce et al. present “religiously integrated cognitive behavior therapy” (RCBT) that blends the cognitive model of psychotherapy with the religious beliefs of the client developed for Christianity, Judaism, Islam, Buddhism, and Hinduism emphasizing renewing of the mind, scripture memorization, contemplative prayer, challenging negative schemata, behavioral practices identified in religion, resources available within respective religions, and religious community involvement.⁹⁵ Additionally, while many CBTs are disorder-specific, the trend towards more universal transdiagnostic computerized cognitive behavioral therapy programs (TD-cCBT) has been found to achieve comparable results in reducing D&A while offering ease of availability and increased efficiency.⁹⁶

The science on depression and anxiety demonstrates the protective and therapeutic effect of R/S. Several meta-analyses validate the various aspects of organizational religion, non-organizational religion, and markers of subjective religiosity with an immunizing effect for D&A. Techniques in neuroimaging using MRI, fMRI, and PET combined with 5-HT_{1A} antagonists have identified dysregulated areas in the PFC (e.g., subgenual ACC), basal ganglia

⁹³ David F. Tolin, “Is Cognitive-behavioral Therapy More Effective Than Other Therapies? A Meta-Analytic Review,” *Clinical Psychology Review* 30, no. 6 (August 2010): 718, <https://doi.org/10.1016/j.cpr.2010.05.003>.

⁹⁴ Clark, Chamberlain, and Sahakian, “Neurocognitive Mechanisms in Depression,” 67.

⁹⁵ Michelle J. Pearce et al., “Religiously Integrated Cognitive Behavioral Therapy: A New Method of Treatment for Major Depression in Patients with Chronic Medical Illness,” *Psychotherapy* 52, no. 1 (March 2015): 56-66, <https://doi.org/10.1037/a0036448>.

⁹⁶ Jill M. Newby et al., “Transdiagnostic Computerised Cognitive Behavioural Therapy for Depression and Anxiety: A Systematic Review and Meta-analysis,” *Journal of Affective Disorders* 199 (July 2016): 39, <https://doi.org/10.1016/j.jad.2016.03.018>.

(e.g., striatum and thalamus), and temporal lobe (e.g., hippocampus and amygdalae) with correlating cognitive dysfunctions in executive functioning, memory, affective processing bias, and feedback sensitivity. In MDD and GAD, the executive function deficits of the frontal lobe present as difficulties in planning and organization. Memory deficits are evident in hippocampal atrophy from a repeated/chronic HPA stress response mediated by cortisol and BDNF/proBDNF. Affective processing bias with the maximization of negative schemata and the minimization of positive schemata localizes to increased activity of the subgenual cingulate, orbitofrontal and medial PFC, and amygdala. The exacerbation of negative feedback sensitivity is consistent with PFC dysregulations and a heightened amygdala response. The prevailing theories on pathological MDD and GAD include Seligman's learned helplessness model, Beck's cognitive model, and the high anxiety trait neuroticism model. First-line therapies for MDD and GAD are trending away from pharmacotherapy, given the side effect profiles of ADMs and low remission/response rates, and toward evidence-based psychotherapy that favors CBT. Roughly 72 to 85 percent of meta-analyses regarding the effects of R/S on D&A report positive relationships with higher quality studies yielding higher positivity. With the ample literature on R/S, the development of religion-specific RCBT seeks to bridge the sociological lacunae between therapists and clients. At the same time, the utilization of computers veers away from diagnosis-specific treatment in favor of a generalized transdiagnostic approach with the validation of TD-cCBT.

Chapter 3

On the Philosophy of Depression and Anxiety

What best explains these results on the science of D&A? Is the philosophy of science obligated solely to matter and energy as the priority of cause and effect (i.e., scientific materialism)? Are the positive effects of R/S on D&A mere constructs of naturalistic evolutionary biology to compensate for inherent egocentric issues like low self-esteem and low individual mastery of the circumstances of life? Does humankind participate in a group morality due to natural selection in a neo-Darwinian survival of the fittest? The answers to these questions first require an examination of the philosophy of science and scientific materialism.

The Philosophy of Scientific Materialism

The great metaphysical questions of the ages have enthralled human minds since the beginning of rational thought. Why is there something rather than nothing? Why, both subjectively and objectively, does everyone exist? What is the purpose of individual existence? To which moral values and duties should everyone subscribe and why? Is there any existence or purpose after this life? The answers to such questions assist in making up the worldview of individuals. Notice that such questions cannot be answered strictly through the scientific method's empirical observations and testable hypotheses. Four of the seven common theological worldviews prioritize mind before matter: theism, deism, polytheism, and finite godism. The worldview known as atheism justifies eternal matter and energy as the priority over the mind. The remaining two worldviews of pantheism and panentheism emphasize that all matter is merely part of a larger scheme that simply *is* all of (pantheism) or part of (panentheism) totality of the mind.

Scientific materialism (SM) as a philosophy complements the atheistic worldview that all matter and energy exist from the past eternal to the future *ad infinitum*. Some important metaphysical answers for atheism include something must come from nothing (or eternally exist in an infinite regression), the fine-tuning of the universe is a result of random effect, life evolves from non-life, information systems emerge from chaos, and the conscious mind is the consequent of unconscious matter. Therefore, the atheist that employs SM adopts a philosophy of science that depends on a methodological naturalism in which all attempts to explain scientific findings must utilize naturalistic, and therefore materialistic, terms and ideologies.

Historically, SM is a product of the Enlightenment as atheism seeks to dethrone theistic rationalism in Europe during the seventeenth and eighteenth centuries. According to the philosopher of science Stephen Meyer, the scientific revolution, dated from the Copernican Revolution in 1543 to Newton's *Philosophiae Naturalis Principia Mathematica* in 1687, allows for the scientific methodology of observations and hypotheses based on the theistic contingencies of God's revelations through nature.⁹⁷ The pioneers of science, including Galileo as the "father of observational astronomy," Robert Boyle as the "father of the modern theory of intelligent design," and Isaac Newton as the "father of physics," use inductive logic to discover "natural laws" derivative from a transcendent and personal God.⁹⁸ The original etymology of "natural laws" is a derivation from ancient philosophy. "Whereas the Greeks conceived of these principles as *logically necessary* axioms inherent in (or internal to) nature itself, the scientists during the seventeenth century began to conceive of the laws of nature as contingent forms of

⁹⁷ Stephen C. Meyer, *Return of the God Hypothesis: Three Scientific Discoveries that Reveal the Mind Behind the Universe*, (New York: HarperCollins, 2021), 22.

⁹⁸ *Ibid.*, 33-47.

order that were *impressed* upon nature from the outside by a creator.”⁹⁹ Early scientists as “natural philosophers” are no longer obligated to the logical deduction of natural axioms or first principles.¹⁰⁰ Moreover, natural laws imply a divine superintendent that emboldens the utilization of mathematics to communicate natural laws.¹⁰¹

After the Thirty Years’ War (1618-48), Europeans were increasingly frustrated with religion and amenable to the epistemology of empiricism free of Christian theism. Science and religion begin to be separated and compartmentalized by rationalism. The theistic skepticism of René Descartes influences the autonomy of science that exemplifies the socially liberal yet deistically inclined Voltaire. Baruch Spinoza pantheistically postulates the universe as portions of both divine thought and extension, leading to his writing “*Deus sive Natura*” (“God or Nature”). The outright divorce of science and theology emerges explicitly in the writings of authors such as David Hume. By arbitrarily defining that all miracles *violate nature* (rather than supersede nature), Hume assumes his conclusion to deny any supernatural interference with nature, thus begging the question. Pierre Laplace, in 1796, describes an entirely materialistic explanation of the universe constructing the nebular hypothesis. Then in 1830-48, Auguste Comte widens the gap of theism and science with his epistemology of positivism: society evolves in three stages described as (1) theological with an emphasis on myth and unsubstantiated belief, (2) metaphysical as a semantic describing the examination of universal human rights, and (3) positive in which scientific methods reveal the answers of the previous two stages.

⁹⁹ Meyer, *the God Hypothesis*, 39.

¹⁰⁰ Ibid., 40

¹⁰¹ Ibid.

The emergence and widespread acceptance of SM then precipitate the further exclusion of any non-materialistic explanations in science, opting instead for the construction of methodological naturalism. Charles Darwin promotes such a method in his 1859 publication *On the Origin of Species* while actively challenging any immaterial theories of others: “what [Darwin] questioned in his attack against his rivals was not just their ability to explain the evidence, but rather the scientific *legitimacy* of any theory that failed to offer a materialistic cause for observable phenomena.”¹⁰² The combination of atheistic methodological naturalism in the evolutionary biology of Darwin augments the social science of Karl Marx and the psychological science of Sigmund Freud to lay the foundation for modern thought regarding the philosophy of science, specifically metaphysical SM using methodological naturalism.¹⁰³

So, is science constrained to the presupposition of methodological naturalism with exclusive use of materialism? First, it is essential to recognize that methodological naturalism does not obligate an individual to a particular metaphysical worldview. The theist, atheist, or pantheist may restrict oneself to a method based solely on material explanations for natural phenomena. So, while SM assumes methodological naturalism, the inverse relationship is not necessarily implied. Second, there is no philosophical reason *a priori* that any given scientist must presuppose a strictly materialistic methodology. Suppose methodological naturalism is justified using only naturalistic scientific explications. In that case, this commits the fallacy of *petitio principii* (i.e., begging the question) by assuming the conclusion of methodological naturalism to support the premise of methodological naturalism. As stated, question-begging examples include merely defining science as the study of the materialistic causes for natural

¹⁰² Meyer, *the God Hypothesis*, 61.

¹⁰³ *Ibid.*, 62-3.

events, in addition to the fact of using material natural laws, observations, and hypotheses to warrant strictly material causality.

Examining the Science of Depression and Anxiety

So, does atheistic SM, which presupposes methodological naturalism, best explain the science on D&A? The answer to this question requires a rational evaluation of worldviews comparing the differing philosophies of science considering deductive, inductive, and abductive logic.

Deductive Logic

The practice of science uses deductive reasoning to draw hypothesis-based specific conclusions from a broader substrate of data. Deductive schemes entail antecedent premises that argue in favor of a concluding consequent. If the premises of a deductive argument are reasoned so that, if true, the conclusion necessarily follows, then the argument is considered valid. Likewise, if the premises and the conclusion of a valid argument are true, the argument is considered sound. A typical example of a valid and sound deductive argument is: (1) all men are mortal, (2) Socrates is a man, (3) therefore, Socrates is mortal. The premises (1) and (2) are true, and the conclusion (3) necessarily follows. Note that in science, such absolute certainty of conclusions is seldom attainable. Necessary conclusions via deductions are thus not as common in scientific inquiry as in philosophical arguments.

Deductive reasoning presents a difficulty in any attempts at analyzing the science of D&A. The meta-analyses strongly suggest a positive effect of R/S on D&A, but to draw absolute deductive conclusions overstates the position. Furthermore, using such scientific information on D&A to make any metaphysical conclusions supporting a moral truth claim of a particular

worldview due to R/S commits the “is/ought” fallacy (i.e., since religion provides insulating and immunizing effects for D&A, it ought to be practiced). The descriptivism of science cannot be used in this manner to assert a normative or prescriptive morality. While deductive conclusions regarding R/S and D&A remain unreasonable *in particular*, philosophy provides substantial deductive logic refuting metaphysical materialism *in general*.

The Leibnizian contingency argument addresses the most basic metaphysical question: “why is there something rather than nothing?” To expound on the argument, the principle of sufficient reason (PSR), in which everything that exists has an explanation of its existence, is constructed by the German polymath Gottfried Wilhelm Leibniz (1646-1716). From the PSR, a deductive syllogism follows: (1) everything that exists has an explanation of its existence, (2) if the universe has an explanation for its existence, that explanation is God, and (3) the universe exists.¹⁰⁴ These three premises imply a conclusion that the explanation for the existence of the universe is God, thus supporting the worldviews of theism, deism, and polytheism while excluding atheism, pantheism, and panentheism.

The scientific atheist may deny the PSR in premise (1), but this has damaging repercussions in science to deny the observed causality of existence. Most atheists accept premise (2) given its logical contraposition equivalency of “if God does not exist, then the universe does not have an explanation of its existence.”¹⁰⁵ So, only illogical and unsubstantiated positions remain that either deny an external cause for the universe’s contingency (i.e., the universe causes itself), defend an infinite regress in the materialism of the universe, or supply a non-personal necessary abstract causality for the universe.

¹⁰⁴ William Lane Craig, *Reasonable Faith: Christian Truth and Apologetics* (Wheaton, IL: Crossway, 2008), 106.

¹⁰⁵ *Ibid.*, 108.

Another standard deductive syllogism is the Kalām Cosmological Argument presented by medieval Muslim scholar Al-Ghazali and popularized by William Lane Craig. This syllogism states (1) “everything that begins to exist has a cause,” (2) “the universe began to exist,” and (3) “therefore, the universe has a cause.”¹⁰⁶ Physics and experience confirm the truth of premise (1). Parmenides in ancient Greece supported the same by affirming the contraposition *ex nihilo nihil fit*, or “out of nothing, nothing comes.” Like Leibnizian contingency, the scientific atheist may attempt to deny (2) through an infinite universe, nonstandard untestable models of the universe’s origin, or models that attempt to explain a universe that causes itself. However, while mathematical infinities provide descriptions of infinity, “actual infinity” is arguably incoherent and creates logical absurdities as generated with the exemplar thought experiment “Hilbert’s Hotel.” Additionally, nonstandard models that include steady states, oscillations, vacuum fluctuations, chaotic inflationary cosmology, quantum gravity, and string theory scenarios still require an actual beginning. The Kalām Cosmological Argument thus additionally reinforces a philosophical argument against atheism, pantheism, and panentheism while favoring theism, deism, and polytheism.

A third philosophical deductive argument refuting SM is in teleology regarding the fine-tuning of the universe using *mathematical constants* and *arbitrary physical quantities*. The physical laws of nature contain various constants with values that would make life untenable when altered even slightly. Five such constants include the electromagnetic force (α), the gravitational force (α_G), the weak nuclear force (α_w), the strong nuclear force (α_s), and the ratio between the mass of a proton and the mass of an electron (m_n/m_e).¹⁰⁷ According to physicist Paul

¹⁰⁶ Craig, *Reasonable Faith*, 111.

¹⁰⁷ *Ibid.*, 158.

Davies, alterations in either α_G or α_w by one part in 10^{100} would exclude life-permitting circumstances.¹⁰⁸ Stephen Meyer notes α demonstrates “moderate” fine-tuning of one part in twenty-five while the α_s to one part in two hundred.

Moreover, the specific ratios of these force constants exhibit fine-tuning. For example, $\alpha_w:\alpha_s$ has a precision of one part in ten thousand such that hydrogen fusion in cosmological stars would fail if altered.¹⁰⁹ Additionally, if $\alpha:\alpha_G$ were altered by one part in 10^{40} , then entire solar systems would be destabilized by the effects of gravity on the atomic nuclear repulsion of electromagnetism.¹¹⁰

Arbitrary physical quantities also display improbable fine-tuning of the universe. Given the standard model of cosmology, the density (Ω_0) and speed of expansion (H_0) of the universe after the singularity provide two such quantities.¹¹¹ Using the natural units of Planck time, 10^{-43} seconds after the singularity, the Ω_0 (density of the universe) has a precision of one part in 10^{60} to maintain a critical Euclidean spacetime flatness ($\Omega_0=1$).¹¹² If Ω_0 is greater than one, then the positively curved universe would explode into nothingness, while if less than one, the negatively curved universe would implode back onto itself (colloquially called “the Big Crunch”). Flatness for the universe, in this sense, is not like a piece of paper. Instead, it refers to a geometry in which a measured triangle in spacetime will have internal angles totaling one-hundred eighty degrees (rather than a non-Euclidean positively or negatively curved universe with internal triangle angles totaling greater than and less than one-hundred eighty degrees, respectively).

¹⁰⁸ Craig, *Reasonable Faith*, 158.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

¹¹¹ Ibid.

¹¹² Ibid.

Citing another improbable arbitrary quantity, Sir Roger Penrose, in his study on the universe's low-entropy (highly ordered) state, concludes that there are $10^{10(101)}$ possible configurations for low-entropy universes similar to actual conditions.¹¹³ However, this number is infinitesimal compared to the vast $10^{10(123)}$ configurations for high-entropy universes that would be subject to a life-prohibitive number of black holes.¹¹⁴ While both numbers appear at first glance to be massive, the larger number dwarfs the smaller. Meyer retorts, "Indeed, dividing $10^{10(101)}$ by $10^{10(123)}$ just yields the number $10^{10(123)}$ all over again."¹¹⁵

Using these physical constants and arbitrary quantities, a three-step syllogism from teleology yields: (1) "the fine-tuning of the universe is due to either physical necessity, chance, or design," (2) "it is not due to physical necessity or chance," (3) "therefore, it is due to design."¹¹⁶ The first premise is straightforward and acceptable to most atheists. In justifying premise (2), a universe of physical necessity is implausible. There is some possible world scenario in which this universe is not logically *necessary* and is therefore contingent. Likewise, the mathematical constants and arbitrary quantities mentioned are contingent and not logically *necessary*. Regarding the chance hypothesis for the fine-tuning of the universe, the vast improbability of obtaining a life-permitting universe by chance makes such an inference practically impossible. The best explanation is design which favors of theism, deism, polytheism.

A fourth deductive philosophical syllogism is referred to as the moral argument regarding moral values and obligations: (1) if objective moral values and obligations exist for humanity, then a personal objective moral giver exists apart of humanity, (2) objective moral values and

¹¹³ Meyer, *the God Hypothesis*, 150.

¹¹⁴ Ibid.

¹¹⁵ Ibid.

¹¹⁶ Craig, *Reasonable Faith*, 161.

obligations do exist, (3) therefore, there is a personal objective moral giver apart from humanity. A personal objective moral giver implies either theism, polytheism, or deism while excluding impersonal causes such as atheism, pantheism, and panentheism.

The SM atheist may reject premise (1) by defending objective morality through moral Platonism. On such a view, moral values and obligations exist necessarily as abstract objects (similarly to numbers and mathematics for the Platonist). The appropriate abstract moral property then supervenes on the correct corresponding ethical scenario. Erik Wielenberg defends such a metaethical view he labels “godless normative realism” in which normative properties (e.g., moral rightness and goodness) dependently supervene upon non-normative properties through “*making as causation*” (a semantic defended as a “brute fact” type of causation).¹¹⁷ Accordingly, when a Samaritan performs a “good deed,” the normative property of “goodness” supervenes on the non-normative property that is the “deed” through brute fact causation as confirmed through the observation of the “goodness” that makes the “good deed.” The immediate critique of this theory of moral Platonism is that abstract non-personal objects do not have causal properties to perform supervenience (hence, the reliance on brute fact). By extension, abstract non-personal objects lack rational discernment to choose which non-normative objects upon which to supervene. What prevents random normative properties from supervening accidentally in any given situation? What if evil supervenes in place of good or wrong in place of right?

The SM atheist can reject premise (2) by defending moral subjectivity, but this results in subjective moral judgments in which all statements of “ought” and “should” are also subjective.

¹¹⁷ Erik J. Wielenberg, *Robust Ethics: The Metaphysics and Epistemology of Godless Normative Realism* (New York, NY: Oxford University Press, 2014), 13-38, <https://doi.org/10.1093/acprof:oso/9780198714323.003.0001>.

Continuing with such a view, the holocaust of World War II is not genuinely wrong but becomes just an outlier of relative morality; there is no true right and wrong. However, while subjective morality remains poor in theory, individuals assign objective moral judgments daily in practice. Moral judgments are intrinsic to human ontology, whether it is the wrongness of personal theft, the physical or sexual abuse of a child, or the murder of a significant other. William Lane Craig compares the apprehension of objective moral values and obligations to the sensory experience of objectively existing physical objects. “Just as it is impossible for us to get outside our sensory input to test its veridicality, so there is no way to test independently the veridicality of our moral perceptions.”¹¹⁸ So, unless one adopts a radical skepticism that includes doubting objective physical existence and moral intuitions, the objectivity of moral experience may be justified in the same manner as physical objects. The experiences of physical realism and morality are therefore properly basic beliefs that are foundational epistemologically. Objective morality supports the supernatural mind worldviews while refuting atheism, pantheism, and panentheism.

A final philosophical deduction known as the conceptualist argument involves an extension of the concept of abstract objects. A conceptualist argument syllogism includes: (1) “abstract objects, such as numbers and propositions, are either independently existing realities or else concepts in some mind,” (2) “abstract objects are not independently existing realities,” (3) “if abstract objects are concepts in some mind, then an omniscient, metaphysically necessary being exists,” (4) “therefore, an omniscient, metaphysically necessary being exists.”¹¹⁹ This argument is an *a posteriori* ontological argument that refutes atheism and, therefore, SM. Premise (1) rejects nominalism (the ontological theory that universals, abstracts, and

¹¹⁸ Craig, *Reasonable Faith*, 179.

¹¹⁹ *Ibid.*, 187.

propositions are merely names) in favor of realism. Premise (2) denies Platonism and the lack of causal efficacy of Platonic abstract objects. Premise (3) implicitly states that the grounding of abstract objects cannot be from the mind of temporal/contingent human beings and, therefore, must be grounded in the mind of a metaphysically necessary being. While skeptics may reject various premises, it still follows that if more plausible than not, the conceptualist argument favors a mind over matter as the ultimate priority, contrary to atheism and SM. Logically, there is no *a priori* reason to reject the conceptualist argument arbitrarily in favor of Platonism or SM.

So, while the defense of direct deductions regarding the immunizing and insulatory effects of R/S on D&A remains elusive, the five deductions, as mentioned earlier, provide separate individual philosophical arguments in opposition to atheism and SM. The review of the individual premises is cursory and not intended to be an exhaustive treatment of each argument. Leibnizian contingency and the PSR answer the metaphysical first cause of the universe as to why there is something rather than nothing. Kalām cosmology provides for the beginning of the universe. The fine-tuning of the universe requires an answer, not just for the complexity of natural observations but also for the highly improbable mathematical constants and arbitrary quantities identified in physics. Objective moral values and obligations require an objective moral giver for justified true beliefs on moral intuition and are foundational for normative living. Furthermore, abstract objects may plausibly be grounded conceptually in a necessary being. Combining these five philosophical deductions provides a robust cumulative case against SM in favor of theism, deism, and polytheism.

Inductive Logic

The scientific method, including the meta-analyses describing the positive effects of D&A on R/S, primarily uses inductive logic. Whereas deductions involve narrowing broad

statements to reach more specific conclusions, inductions from specific findings lead to broader conclusions that are most likely or probable but not certain. An example of a logical induction is: (1) all Canada geese observed around a local lake in Missouri are black, white, and brown, (2) all Canada geese observed around lakes visited in Illinois and Iowa are black, white, and brown, (3) therefore, it is most likely that all (or at least the majority) of the Canada geese observed around lakes in all states are black, white, and brown. Two specific observations in premises (1) and (2) result in a probable but not certain, broader conclusion (3). Additionally, more observational data on Canada geese from more states and lakes would further support or refute the conclusion. However, without observational certainty of *every* Canada goose around *every* lake in *every* state, the conclusion (3) may not necessarily be true. Inductive inferences are commonplace in everyday logic. Inductions include times and days in which banks, hospitals, and restaurants are open for business, evidence-based medicine of healthcare providers regarding patient diagnoses and treatments, and investment decisions regarding public stocks, bonds, real estate, private equity, commodities, and currency.

The discussion presented in the first chapter represents the inductive logic on D&A for this monograph. The results of metaanalyses support the positive effects of R/S on D&A, with higher quality studies supporting higher percentages of positive effects. Additionally, the neurocognitive mechanisms for D&A include the systems-based dysfunction of the PFC and subgenual ACC, subcortical regions in the striatum and thalamus, and temporal lobe to include the amygdalae and hippocampus.

Abductive Logic

Abductive logic entails inference to the best explanation through causality from observed effects. The 19th-century children's fairy tale of "Goldilocks and the Three Bears" exemplifies

abductive reasoning as the three bears best explain the observed effects of eaten porridge, used chairs, and slept in beds. William Dembski in *The Design Inference* presents “The Explanatory Filter” as a sound and valid deductive syllogism to logically describe an exhaustive and mutually exclusive three-step algorithm as a mechanism to draw abductive inferences for probability events that include regularity, chance, and design.¹²⁰ As the first step to consider, *regularity* refers to high-probability repeatable natural events that are consistent, predictable, and exclude chance and agency. Events of regularity are therefore reducible to physics, chemistry, and the laws of nature. Examples of regularities include gravity, electromagnetism, and thermodynamics. Barring any extraordinary variables, a ball will fall with gravity, an alnico magnet will attract ferromagnetic material, and hot coffee will cool if left at room temperature. Such events are not caused directly by chance or as a result of design.

According to Dembski’s algorithm, an intermediate or low probability event that is rarely repeatable excludes regularity. The second step of the Explanatory Filter, in this case, identifies *chance* as the most likely explanation. A chance event lacks specified complexity and is infrequently reproduced, given the nature of intermediate or low probability. Common examples of chance events with low probability include specified series of “heads or tails” coin tosses, the random opening of combination safes, and high-valued hands in poker.

As the third step in the Explanatory Filter, Dembski elaborates that if a low-probability event then also provides *specified complexity*, then an inference of *design* with the exclusion of chance provides the best explanation. Specified complexity describes highly detailed patterns with nonrandom low entropy/highly ordered sequences (e.g., one hundred heads in a row using a

¹²⁰ William A. Dembski, *The Design Inference: Eliminating Chance Through Small Probabilities* (New York, NY: Cambridge University Press, 1998), 36-66.

fair coin). It might be justified to favor chance with the specified pattern of three sequential heads tosses in a row with a probability of 2^3 , but what about a sequence of heads for one hundred tosses in a row? Such an exceedingly low probability event displays a specificity and low entropy complexity to justify an inference of design.

Alternatively, consider a three-combination lock with forty possible selections per combination with a probability of one in sixty-four thousand (40^3). With such a lock, it is entirely possible by chance, even though not probable, that someone may successfully open the lock on the first attempt. However, if a student in a classroom successfully opens such a lock on a first attempt, many skeptics would resist inferring chance for such a low probability event with such specified complexity. Public opinion may prefer an accusation of cheating or knowing the combination ahead of time, or in other words, a design inference.

Now, consider a bank vault with a five-combination safe with one hundred possible selections per dial. The probability of randomly opening the vault on the first attempt is one in 10^{10} (or 100^5). If such a vault has been opened from a single attempt correct combination, rather than random chance providing for a “lucky guess,” Dembski’s explanatory filter submits that a design inference provides a better explanation for the breach. The filter displays an inverse complementary relationship: the lower the probability and the greater the specified complexity, the more justification for a design inference.

Dembski provides two additional proofs of the filter’s reliability. “The first is a straightforward inductive argument: in every instance where the Explanatory Filter attributes design and where the underlying causal story is known, it turns out design is present.”¹²¹ The

¹²¹ William A. Dembski, *Mere Creation: Science, Faith & Intelligent Design* (Downers Grove, IL: InterVarsity Press, 1998), 107, 111-2, Google Scholar.

second is a reliable criterion that mirrors general praxis by which “to recognize intelligent causation we must observe a choice among competing possibilities, note which possibilities were not chosen and then be able to specify the possibility that was chosen.”¹²² In other words, a design inference is a rational abductive conclusion among the competing options.

To summarize, Dembski’s argument using the Explanatory Filter to determine an inference of regularity, chance, or design for an event (E) is:¹²³

Premise 1: E has occurred.
 Premise 2: E is specified.
 Premise 3: If E is due to chance, then E has small probability.
 Premise 4: Specified events of small probability do not occur by chance.
 Premise 5: E is not due to a regularity.
 Premise 6: E is due to either a regularity, chance, or design.
 Conclusion: E is due to design.

Dembski also modifies this syllogism to consider life on planet Earth (denoted as LIFE) as he evaluates anti- and pro-evolutionary arguments:¹²⁴

Premise 1: LIFE has occurred.
 Premise 2: LIFE is specified.
 Premise 3: If LIFE is due to chance, then LIFE has small probability.
 Premise 4: Specified events of small probability do not occur by chance.
 Premise 5: LIFE is not due to a regularity.
 Premise 6: LIFE is due to regularity, chance, or design.
 Conclusion: LIFE is due to design.

If LIFE is due to design, then the various levels of systems within LIFE are also due to design. Expanding on the design inference using a leading philosopher of mind, J. P. Moreland, the sum of complexity for living biological systems includes an emergent hierarchy from lowest to highest levels to include: “energy, subatomic entities, atoms, molecules, constituents of cells (e.g., organelles), cells, biological systems (e.g., the respiratory system), whole biological

¹²² Dembski, *Mere Creation*, 111-2.

¹²³ Dembski, *The Design Inference*, 48.

¹²⁴ *Ibid.*, 56.

organisms, the psychological level, the sociological level, the theological level.”¹²⁵ Moreland posits that each level is “ontologically basic” with each higher emergent level dependent on a lower state to exist.¹²⁶ For example, a theological state only supervenes if there is a sufficiently complex sociological level, a sociological level only supervenes if there is a sufficient psychological level, and so forth. Therefore, if LIFE exhibits specified complexity and is sufficiently improbable to exist by random chance, then all states that depend on LIFE also display the same properties of specified complexity and improbability. Such states include both the anatomical neurocognitive mechanisms of D&A and the sociological immunizing effects of R/S on D&A. The neurocognitive mechanisms of the PFC (e.g., subgenual ACC), basal ganglia (e.g., striatum and thalamus), and temporal lobe (e.g., hippocampus and amygdala) are systems of the brain that are sufficient for the occurrence of higher mental states, while at the same time are dependent upon lower levels that still qualify for LIFE. The sociological effect of R/S on D&A, in turn, supervenes on the neurocognitive mechanisms of the brain by way of the psychological system.

Do these biological levels of LIFE exhibit specified complexity and improbability sufficient for a design inference? To establish specified complexity, Stephen Meyer reminds interlocutors that DNA as a biomacromolecule within living cells displays both Shannon information and functional specificity.¹²⁷ Shannon information, named for MIT mathematician Claude Shannon, states that “the more improbable an event or sequence, the more uncertainty it eliminates and thus the more information it conveys.”¹²⁸ An example of Shannon information

¹²⁵ J. P. Moreland, “Science, Miracles, Agency Theory & God-of-the-Gaps,” in *In Defense of Miracles*, ed. R. Douglas Geivett and Gary R. Habermas (Downers Grove, IL: InterVarsity Press, 1997), 134.

¹²⁶ Ibid.

¹²⁷ Meyer, *the God Hypothesis*, 172.

¹²⁸ Ibid.

includes comparing flipping a fair coin with two possible outcomes and spinning a roulette wheel with thirty-eight possible outcomes. According to Shannon's theory, the outcome of a roulette wheel spin, with its greater improbability, provides more information than a coin toss.

Applying Shannon information to DNA, individual nucleotide bases are arranged in sequences using one of four options of adenine, cytosine, guanine, and thymine. Based on increasing improbability, the longer the DNA strand, the longer the nucleotide sequence, and thus the more Shannon information contained within the sequence. Francis Crick, known for his role in unraveling the mystery of the helical structure of DNA (and as an outspoken atheist), tacitly supports the Shannon information contained in DNA, stating, "Information means here the *precise* determination of sequence, either of bases in the [DNA] or of amino acid residues in the protein [*italics in the original*]." ¹²⁹ However, Crick expounds that the "central dogma" of his time is that the "flow of information" can only pass from a preexisting nucleic acid (DNA or RNA) sequence: "This [central dogma] states that once 'information' has passed into protein *it cannot get out again*. In more detail, the transfer of information from nucleic acid to nucleic acid, or from nucleic acid to protein may be possible, but transfer from protein to protein, or from protein to nucleic acid is impossible [*italics in the original*]." ¹³⁰

The flow of information of DNA is therefore not just Shannon information. Each three-base sequence is arranged explicitly for transcription and translation into a specific amino acid, with groups of amino acids placed into sequences to make proteins. DNA, therefore, has both Shannon information and encoded functional specificity for protein synthesis.

¹²⁹ Francis H. C. Crick, "On Protein Synthesis," *Symposium for the Society of Experimental Biology* 12 (1958): 153, Google Scholar.

¹³⁰ *Ibid.*

Similarly, DNA displays Kolmogorov complexity. Named for Russian probabilist, Kolmogorov complexity refers to the complexity of information sequences by entropy. A higher entropy sequence requires a longer descriptor than a low entropy sequence. The higher the entropy of a given sequence, the more random the sequence. In binary code, a sequence of one thousand random 0's and 1's is not reducible to a simpler descriptor than its original sequence. However, a sequence of one thousand 1's in a row displays the lowest entropy with a descriptor of "repeat '1' a thousand times." DNA is arranged by codons into exons, introns, genes, and chromosomes, with each providing examples of low entropy descriptors consistent with Kolmogorov complexity.

The information and specificity of DNA have also garnered much support from the scientific community. Evolutionary biologist, Richard Dawkins, maintains that genetic code is "uncannily computer-like," software developer Bill Gates affirms "DNA is like a computer program," and biotechnologist Leroy Hood refers to DNA as "digital code."¹³¹ Therefore, the information contained within DNA exhibits specified complexity through Shannon information, functional specificity, and Kolmogorov complexity.

While there is provision for the specified complexity of DNA sufficient to support a design inference for LIFE and therefore the neurocognitive mechanisms of D&A as a dependent system, are these mechanisms and the existence of DNA sufficiently *improbable* to support a design inference? The primary argument from SM against intelligent design is that it is not just random chance that provides for the specified complexity of LIFE and DNA, but random chance being acted upon by natural selection. This argument includes random genetic mutations that are

¹³¹ Meyer, *the God Hypothesis*, 173.

then acted upon by environmental circumstances that promote an organism's reproductive fitness. The term "fitness landscape" refers to such an environment. Given the 4.5-billion-year age of the earth, improvements in reproductive fitness are defined as sequential and progressive. This neo-Darwinian theory for the evolution of life from common descent using Mendelian genetics and survival of the fittest is perhaps the best naturalistic explanation in the SM arsenal. However, a review of the science reveals at least four difficulties with the neo-Darwinian model that support the improbability of chance or naturalistic devices leading to the diversity of life and the construction of DNA: (1) the application of the "no free lunch" theorem on the optimization of a fitness landscape, (2) the "irreducible complexity" of some biological systems that prevent sequential and progressive development through neo-Darwinism, (3) the improbability of spontaneous *de novo* protein folding necessary for life, and (4) the hierarchy of taxonomy better supports common modular design rather than common ancestry.

The *no free lunch* (NFL) *theorem*, introduced by David Wolpert and William G. Macready, used in computational optimization states that selection of various algorithmic candidate solutions for any given problem may yield different results, but the principle of conservation of information is maintained demonstrating no overall gain in performance metrics when considering all available algorithms. In simpler terms, all unguided optimization solutions will have some superior and some inferior solutions, with an overall net gain of zero. As an example, Winston Ewert, Robert Marks, and William Dembski use the NFL theorem and the conservation of information, demonstrating that for algorithms that attempt to optimize either one, two, or three pirates searching for one treasure at three separate locations (X, Y, and Z) on

an island, no one search algorithm overall exceeds another.¹³² Indeed, to best the performance of any algorithm, additional active information must be supplied. For example, one pirate would have an algorithmic advantage if the search pattern of a competing pirate was known, thus improving the probability of finding the treasure.

In application to neo-Darwinian evolution that determines the sequential and progressive improvement of a species, the NFL theorem operates, assuming a non-personal naturalistic mechanism, with the overall net of zero for all movements in the X, Y, and Z “fitness landscape.” This net of zero movement means that neo-Darwinian theory fails to explain unguided species performance gains without additional information added to the system.

Computer models of evolution support the NFL theorem as well. Attempts to identify the *necessary* conditions for open-ended evolution through artificial simulations have failed to overcome the complexity barrier exhibited in life and the Cambrian explosion. “A major goal of artificial life (alife) research remains to observe open-ended evolution in an alife simulation. In fact, there is little doubt that no algorithm yet devised has fully reproduced it. . . . no scientist has suggested that any system today reproduces the full generativity of nature in all its glory, which raises a fascinating question: *why not?*”¹³³

Also pointed out by Ewert, the difference between the *necessary* conditions and the *sufficient* conditions for open-ended evolution also cannot be understated. Even if researchers successfully identify the necessary conditions in a simulation, this does not mean that such

¹³² Winston Ewert, Robert J. Marks, II, and William A. Dembski, “Conservation of Information in Relative Search Performance,” *45th Southeastern Symposium on System Theory* (March 2013): 71-4, <https://doi.org/10.1109/SSST.2013.6524963>.

¹³³ Lisa B. Soros and Kenneth O. Stanley, “Identifying Necessary Conditions for Open-Ended Evolution through the Artificial Life World of Chromaria,” *ALIFE 14: Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems* (July 2014): Introduction, Paragraph 1, <http://dx.doi.org/10.7551/978-0-262-32621-6-ch128>.

conditions will be sufficient to overcome such a hurdle as the unguided specified complexity of LIFE. “What aside from eons of time (which likely is not the sole ingredient missing from artificial worlds so far) could ignite the fire of an open-ended complexity explosion?”¹³⁴

Since unguided simulations fail to generate new information, only simulations that add active information succeed as an evolutionary algorithm. Montañez, Ewert, Dembski, and Marks demonstrate this fact by highlighting that a proposed neo-Darwinian evolutionary search algorithm called “ev” smuggles in knowledge by mining active information and thus is not unguided compared to the proposed mechanisms in neo-Darwinian theory.¹³⁵ Ironically, the active information added to such simulators to prove “unguided” open-ended evolution implies that, by current standards, only intelligent design is sufficient to overcome the complexity issue.

Another aspect of LIFE and the sub-system of neurocognitive mechanisms that supports a design inference (while also refuting the unguided Darwinian mechanism) is the concept of “irreducible complexity” introduced by Michael Behe. Charles Darwin himself, in his *Origin of the Species*, agrees with Behe’s concept of “irreducible complexity,” stating, “If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down.”¹³⁶

Darwinian mechanisms historically are based on the “Lilliputian biology” that microbes, insects, and small animals “spontaneously” arise from source material like food, beer, milk, and

¹³⁴ Soros and Stanley, “Identifying Necessary Conditions,” Introduction, Paragraph 1.

¹³⁵ George Montañez, Winston Ewert, William A. Dembski, and Robert J. Marks II, “A Vivisection of the ev Computer Organism: Identifying Sources of Active Information,” *Bio-Complexity* 3 (December 2010): 1-5, <https://doi.org/10.5048/BIO-C.2010.3>.

¹³⁶ Charles Darwin, *On the Origin of Species* (Minneapolis, MN: First Avenue Editions, 2018), 177, ProQuest.

urine.¹³⁷ As science has progressed, Behe argues that the discovery of increasingly complex biochemical, cellular machinery adds another complexity issue for purely unguided naturalistic mechanisms. The overly simplistic small progressive and sequential metaphorical jumps necessary for evolution in the mind of Darwin are now known to be large chasms at the molecular level that require assistance to traverse. Behe defines the concept of irreducible complexity as “a single system composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning.”¹³⁸ The analogy of a common household mousetrap displays irreducible complexity in that if any one component is not present, then the mousetrap is rendered nonfunctional. Similarly, Behe uses examples of bacterial flagellum, the blood-clotting cascade, cilia, and the adaptive immune system to demonstrate biological systems that are so molecularly and biochemically complex that each progressive and sequential evolution necessary for the individual parts would not provide any benefits to the fitness landscape of an organism until the entire system exists. This tenet of structure-function is a formidable obstacle to neo-Darwinian evolution and any materialistic attempts to justify LIFE and neurocognitive mechanisms.

Additionally, the study of proteins since the time of Darwin reveals different levels of protein structure that add to the improbability of LIFE as a chance occurrence through neo-Darwinian mechanisms. The primary structure of sequential amino acids that form polypeptide chains gives rise to secondary structures that include the alpha helix of DNA and protein strands

¹³⁷ Michael Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* 10th Anniversary ed. (New York: Free Press, 2006), 25, Kindle.

¹³⁸ *Ibid.*, 40.

that form beta-sheets and tertiary structures involving complex protein folds.¹³⁹ Tertiary and quaternary protein folds provide stable three-dimensional structures crucial for protein synthesis and enzymatic activity in all biological systems. For a *small* protein comprised of *one hundred fifty* sites of *twenty* possible amino acids, there are 1×10^{195} (20^{150}) possible combinations with ever-larger proteins displaying ever-higher numbers due to “combinatorial inflation.”¹⁴⁰

So how improbable are such functional folded domains on proteins? Molecular biologist Douglas Axe through experimentation at Cambridge on β -lactamase, an enzyme that provides some bacteria with resistance to penicillin, estimates that the prevalence may be as low as one functional protein fold of approximately one hundred fifty amino acids out of 10^{77} nonfunctional combinations incapable of any biological function.¹⁴¹ Even using a 3.85-billion-year history of LIFE, there have only been an estimated 10^{40} organisms on the earth.¹⁴² Assuming neo-Darwinian mechanisms of random mutation and natural selection, the number of trials (10^{40}) using a generous one novel sequence per organism to search for a functional protein fold among the nonfunctional combinations (10^{77}) still falls short by 10^{37} attempts. As summarized by Meyer:¹⁴³

The number of trials available to the evolutionary process turns out to be incredibly small *in relation to* the number of *possible* sequences that need to be searched.... It is therefore overwhelmingly *more likely than not* that a random mutational search would have *failed* to produce even one new functional (information-rich) DNA sequence capable of coding for one new protein fold in the entire history of life on earth. [italics in the original]

¹³⁹ Meyer, *the God Hypothesis*, 203.

¹⁴⁰ *Ibid.*, 204.

¹⁴¹ Douglas D. Axe, “Estimating the Prevalence of Protein Sequences Adopting Functional Enzyme Folds,” *Journal of Molecular Biology* 342, no. 5 (August 2004), 1295, <https://doi.org/10.1016/j.jmb.2004.06.058>.

¹⁴² Meyer, *the God Hypothesis*, 206.

¹⁴³ *Ibid.*, 206-7.

Finally, computer scientist Winston Ewert challenges materialistic thought in his work analyzing the hierarchical classification of life. The traditional notion of the “tree of life” is already considered by some authorities to be falsified.¹⁴⁴ Modern molecular data concerning prokaryote lateral/horizontal gene transfer is simply not congruent with a single common progenitor. This revelation has caused some academics obligated to SM and a materialistic philosophy to rescue a falsified common ancestor theory by modifying the hierarchy of life to accommodate evolutionary theory.¹⁴⁵

However, Ewert proposes and tests a hierarchical classification of LIFE by examining relationships of similar dependencies for function among different species using a dependency graph.¹⁴⁶ In computer science, new tasks and programs are created by simply adding a dependency to a previously written module of code.¹⁴⁷ A dependency graph is a “structure that results from considering all the modules and the dependencies between them.”¹⁴⁸ By applying the module dependency concept to the nested hierarchy, *the dependency graph of life* predicts “instances of module reuse across taxonomic boundaries” that supports *common design* over common ancestry.¹⁴⁹ By following the scientific evidence for intelligent design, Ewert posits that “the concept of a dependency graph draws not from an ad-hoc attempt to explain the data, but the actual process used to develop software. It is based on behaviors and practices that intelligent

¹⁴⁴ W. Ford Doolittle, “The Practice of Classification and the Theory of Evolution, and What the Demise of Charles Darwin’s Tree of Life Hypothesis Means for Both of Them,” *Philosophical Transactions of the Royal Society B* 364 (2009): 2221, <https://doi.org/10.1098/rstb.2009.0032>.

¹⁴⁵ Ibid., 2224.

¹⁴⁶ Winston Ewert, “The Dependency Graph of Life,” *Bio-Complexity* 3 (2018):1-3, <https://doi.org/10.5048/BIO-C.2018.3>.

¹⁴⁷ Ibid., 3.

¹⁴⁸ Ibid.

¹⁴⁹ Ibid.

agents are known to use, not simply processes necessary to explain the data.”¹⁵⁰ Ewert then analyses a set of nine different gene databases using synthetic datasets through a computer compiler regarding (1) a null model with no pattern to life, (2) a common descent tree model, and (3) a dependency graph model utilizing modules by intelligent design. The databases favor both the tree and dependency graph models over the null model and the dependency graph definitively over the tree model.

To summarize, Ewert stipulates, “Even in the biological gene database least favorable to the dependency graph, HomoloGene, the [result] is in favor of the dependency graph by over 10,000 bits. Recall that 6.6 bits is commonly considered decisive. The data is over 10^{3000} times more likely to be produced by the dependency graph model than the tree model.”¹⁵¹ The other eight datasets favored the dependency model over the tree of life by a range of approximately 41,000 to 515,000 bits.¹⁵²

SM using neo-Darwinian mechanisms is unable to render a mathematical or computer model capable of surpassing the complexity barrier without added information. Evidence of irreducible complexity in the molecular machinery of bacterial flagellum, the blood-clotting cascade, cilia, and the adaptive immune system corroborates Darwin’s original concerns invalidating his materialistic theory in favor of a design inference. The improbability of establishing a single one hundred fifty sequence folded functional protein through a random mutational search is sufficient to infer design. Moreover, analysis of nine different gene databases using the dependency graph hypothesis conclusively supports the dependency graph of life hypothesis due to common modular design rather than common ancestry. Therefore, the

¹⁵⁰ Ewert, “The Dependency Graph,” 3.

¹⁵¹ *Ibid.*, 10.

¹⁵² *Ibid.*

complexity of LIFE and the dependent systems of neurobiology exhibit specified complexity and a sufficiently low probability to warrant a design inference.

Theological Worldviews for Depression and Anxiety

When analyzing all worldviews, theism provides the best explanation for the positive effects of R/S on D&A. Leibnizian contingency, Kalām cosmology, objective moral values and duties, and the scientific data on cosmogony and biological systems lead to the rejection of Pantheism and Panentheism. Comparing theism to other worldviews that exclusively emphasize mind before matter, deism fails to explain the increase in information systems needed to explain the explosion of DNA complexity through the initial conditions of mass and energy of known cosmogony. There is also no Deistic (naturalistic) mechanism to transmit the information needed for life from the time-lapse of the origin of the universe in a protein-prohibitive plasma state to the organization and emergence of life on earth. Indeed, physical chemist Michael Polanyi in “Life Transcending Physics and Chemistry” demonstrates that chemical properties do not determine the specific sequences of the nucleotide bases of DNA, thereby refuting any self-organization by natural means as well by any front-loading of cosmogony from a deistic worldview.¹⁵³ The infinite regress implicit in the necessity of a first cause leads to the rejection of polytheism. Finite godism is excluded from consideration given it lacks quantification of the “pseudo-potency” of a finite god and is primarily used as a philosophy to address theodicy. The remainder of the analysis concerning the best explanation of the effects of R/S on D&A will therefore frame theism versus scientific materialism (SM).

¹⁵³ Meyer, *the God Hypothesis*, 289.

Inference to the best explanation for the effects of R/S on D&A strongly supports intelligent design that in turn advocates for theism. The cumulative deductive, inductive, and abductive case does not support a purely materialistic/naturalistic cause for LIFE and the biological sub-systems necessary for the neurocognitive mechanisms. Deductive philosophy supports theism as the best explanation for: (1) why the universe exists using the Principle of Sufficient Reason and the Leibnizian contingency argument, (2) the beginning of universe using the Kalām cosmological argument, (3) the fine-tuning of the universe given mathematical constants and arbitrary scientific quantities known as the teleological argument, the intuition of moral obligations and duties known as the moral argument, and (4) a necessary mind grounds the conception of abstract objects to include mathematics and numbers in the conceptualist argument. Inductively, the science on D&A supports the positive effects of R/S and identifies the most likely neurocognitive mechanisms. Using abductive logic, a design inference regarding LIFE and the dependent systems of biology to include the neurocognitive mechanisms follows through the (1) specified complexity of DNA that exhibits Shannon information, functional information, and Kolmogorov complexity, (2) the inability of materialistic mechanisms to adequately provide a mathematical or computer model of Darwinian evolution that can hurdle NFL theorems and the complexity barrier of LIFE without added information, (3) the irreducible complexity of biochemical, cellular machinery to include bacterial flagellum, the blood-clotting cascade, cilia, and the adaptive immune system, (4) the improbability of a single unguided *de novo* protein fold necessary for all biological systems, and (5) the dependency graph of life model that emphatically supports the taxonomical hierarchy of life through common modular design exceedingly better than the tree of life through common ancestry.

Theism, therefore, provides for internal logical consistency. R/S is insulatory and immunizing against the effects of D&A because a supreme being provides the standard for the basis of goodness and rightness. Responding to theistic belief through R/S grounds the creation to the creator and provides purpose, meaning, and value.

Conversely, SM can only postulate miscarried evolutionary, sociological benefits of why R/S would affect D&A. Neo-Darwinian theory fails to justify how and why humankind benefits from such a sociological structure instead of other animal species. Similarly, SM fails to follow fundamental scientific axioms by positing life from non-life, something from nothing, complexity from simplicity, information systems from chaos, and rational thought from materialistic causality. If human minds are nothing more than materialistic chemically charged masses of fatty tissue and cognitive processes evolved through neo-Darwinian mechanisms, wouldn't this merely entail minds as biological programs without the fidelity of objective truth? C. S. Lewis quips, "If minds are wholly dependent on brains, and brains on biochemistry, and biochemistry (in the long run) on the meaningless flux of the atoms, I cannot understand how the thought of those minds should have any more significance than the sound of the wind in the trees."¹⁵⁴

The intelligent design of DNA, neurocognitive mechanisms, and psychosocial states sufficient for R/S supports theism and remains the rational, logical, and coherent choice compared to SM. There is no justified *a priori* or in principle argument that excludes the consideration of intelligent design and transcendent intelligence when integrating scientific

¹⁵⁴ C. S. Lewis, *Is Theology Poetry?* (Samizdat University Press, 2014), 14, http://www.samizdat.qc.ca/arts/lit/Theology=Poetry_CSL.pdf.

findings with a particular worldview. A transcendent intelligence is neither impossible nor improbable based on the deductive, inductive, and abductive findings.

SM, however, remains inconsistent and incoherent as a worldview. Materialist positions cannot integrate science and philosophy with the metaphysical views of SM. In order to rescue SM from the theistic implications of Leibnizian contingency, Kalām cosmology, finely tuned cosmogony, objective morality, and the improbability of biological complexity, the materialist posits unnatural and empirically unsubstantiated theories. Regarding fine-tuning alone, inflationary multiverses, string theory, inflaton fields, and hidden spatial dimensions display “a bloated ontology” of unsupported conditions to avoid teleological cosmogony, the implied intelligent design, and theism by conclusion.¹⁵⁵ The information systems in DNA are rationalized as either “seemingly designed” or opting instead for an extension of the informational problem of LIFE, directed by alien panspermia.¹⁵⁶ Abiogenesis, purported through a process of “self-replication, self-assembly, autocatalysis,” is portrayed as “uncontroversial among scientists,” yet the “mechanisms are poorly understood.”¹⁵⁷ Such assertions by the defenders of SM remain *ad-hoc* and contrived.

In reviewing the factual adequacy of theism versus SM, theism remains consistent and coherent while SM fails this criterion. A supreme personal deity that transcends creation through intelligent design is an *a posteriori* conclusion based on the integration of observational science with philosophical conclusions to yield a complementary yet factually adequate worldview. Only a powerful and personal being that exists of necessity and therefore eternally exists outside space

¹⁵⁵ Meyer, *the God Hypothesis*, 336.

¹⁵⁶ *Ibid.*, 264-5.

¹⁵⁷ Wikipedia, s.v. “Abiogenesis,” last modified September 16, 2021, 14:57, <https://en.wikipedia.org/wiki/Abiogenesis>.

and time provides for the causality of all created contingencies, the beginning of the universe, the fine-tuning of the universe, objective moral values and duties, the information systems within DNA, the added active information necessary for the increasing complexity of LIFE, the irreducible complexity of many biological systems, the common modular design of the nested hierarchy of life, and the extreme improbability of folded proteins. As previously stated, SM suffers from issues of deficient causality, specified and irreducible complexity, improbability, abiogenesis, naturalistic information, and empirical mathematical and computer modeling for its views.

Theism also provides for existential viability and intellectual fecundity regarding the effects of R/S on D&A. Ultimate objective meaning, purpose, and value can only exist in an objective standard provided by a transcendent mind. For the practitioner of SM, any ultimate views of meaning, value, and purpose regarding R/S remain subjective. Intellectually, theism grounds and integrates the findings on R/S, all philosophical conclusions, and the science on creation into a prolific worldview that displays an intricate design compared to SM.

In summary, theism provides better explanatory power, internal logical consistency, coherency, factual adequacy, existential viability, and intellectual fecundity without relying on radical *ad hoc* adjustments to rescue the worldview. Theism and intelligent design best explain the positive effects of R/S on D&A, given the philosophical and scientific data.

Chapter 4

On the Theology of Depression and Anxiety

In summary of the conclusions thus far, the science reveals that R/S provides substantial positive effects on D&A. Neurocognitive mechanisms for D&A include effects on cognition, executive function, memory, affective processing, and feedback sensitivity from dysregulated areas in the PFC (e.g., subgenual ACC), basal ganglia (e.g., striatum and thalamus), and temporal lobe (e.g., hippocampus and amygdala). An overall abductive argument using inference to the best explanation defends a cumulative case in support of theism as the most plausible worldview to support LIFE, the neurocognitive mechanisms of D&A, and the effects of R/S on D&A. Deductive logic supports theism from Leibnizian contingency, Kalām cosmology, teleological fine-tuning, and objective morality. A design inference ultimately supports theism through the information systems of DNA, the irreducible complexity of biochemical processes, the added information necessary for increasing biological complexity and diversity, the common modular design of the nested hierarchies of LIFE, and the improbability of unguided *de novo* functional protein folds.

Since theism provides the best explanation for the science and philosophy of D&A, Christian theism, this chapter argues that Christian theism is the most likely form of theism. A “minimal facts” defense for Christianity as popularized by Gary Habermas, Michael Licona, and William Lane Craig allows for adequate academic support without delving into the intricacies of various theistic beliefs. The minimal facts used to substantiate Christianity include the commonly accepted historicity of (1) the death/crucifixion of Jesus of Nazareth, (2) the empty tomb, (3) the eyewitness accounts of Jesus of Nazareth after his death, (4) the immediate and profound transformation of the disciples, (5) the conversion of Paul, (6) the conversion of James,

and (7) the rapid promulgation of Christianity throughout the known world. By accepting the historicity alone of these enumerated minimal facts regarding Jesus of Nazareth, Christianity may be defended as true regardless of any additional critique of subsequent Christian doctrine.

Christian Doctrine Relevant to Depression and Anxiety

As a consequence of the Christian theism minimal facts apologetic, the synthesis of the Christian theistic worldview provides a logical progression that best explains the positive effects of R/S on D&A. In Christian doctrine, an omnipotent, omniscient, omnibenevolent trinitarian God in the tradition of Saint Anselm (“a being than which nothing greater can be conceived”) condescends to create humankind *imago Dei*, or in his image (“demut” from Genesis 1:26-7) and likeness (“selem” from Genesis 5:1, 9:6). A sovereign God that mandates humankind’s “royal duty and role on the earth” with dominion over all creation (Genesis 1:28) supports a *functional* interpretation of the *imago Dei*.¹⁵⁸

However, William Lane Craig points out that “a functional interpretation does not preclude, and even presupposes, a substantial interpretation.”¹⁵⁹ The *imago Dei*, in the *substantial* view, is an ontological component of each person. Craig explicates, “The reason we can function as God has commanded us to is that we are created in God’s image; that is to say, we have some ontological similarity to God that enables us to serve as his representative and co-regent.... we are persons in the same way that God is personal and thus have the attributes of personhood.”¹⁶⁰ The *imago Dei* includes rational cognitive faculties like self-consciousness, symbolic thinking, executive planning for the future, thinking in abstract categories, and freedom

¹⁵⁸ William Lane Craig, *In Quest of the Historical Adam: A Biblical and Scientific Exploration* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2021), 525, Kindle.

¹⁵⁹ *Ibid.*, 528.

¹⁶⁰ *Ibid.*, 530.

of will.¹⁶¹ Following such logic, the substance of an object frequently subsumes the function of an object. So too is humankind's royal function of co-regency over creation subsumed under the ontological substance of the *imago Dei*.

Another relevant common locus of Christian doctrine provides for divine revelation from God. Divine revelation is divided into two broad types to include *general* and *special* revelation. General revelation is further divided into truths revealed by God externally in *creation* and internally through the *conscience*. In contrast, special revelation refers to God's uncovering of truth in the *written logos* known as the Bible, the *living logos* in Jesus Christ, and controversially in *particular* revelation through dreams and visions (depending on the position regarding the doctrine of cessationism).

If God remains sovereign over all creation and interacts through divine revelation, then how can individuals created in the image of God maintain moral agency in which they are accountable and responsible for their choices? Rather than defer to the mysticism of apophatic theology in which answers to such questions remain inscrutable, God calls on individuals to "try to discern what is pleasing to the Lord" (Ephesians 5:10).¹⁶² The ability to do or not do something reveals God's allowance for humankind to reason and have moral agency, thus supporting a free-will thesis. Nevertheless, is free will and, therefore, moral agency possible without sacrificing the sovereignty of God? At the crux of the debate is moral responsibility and determinism. Regarding individual moral agency, Peter Van Inwagen describes the Principle of Possible Prevention (PPP) in which "a person is morally responsible for a state of affairs only if

¹⁶¹ Craig, *the Historical Adam*, 530.

¹⁶² Unless otherwise noted, all biblical passages referenced are in the *English Standard Version* (Wheaton, IL: Crossway, 2008).

(that state of affairs obtains and) he could have prevented it from obtaining.”¹⁶³ The PPP, and by extension moral responsibility, are therefore incompatible with determinism.

Incompatibilism by no means diminishes the sovereignty of God. Under the doctrine of providence in the Molinist view, an Anselmian God prior to creation has a *natural knowledge* of all possible worlds.¹⁶⁴ Then through a perfect *middle knowledge* of what would happen in every possible situation (i.e., hypothetical counterfactuals), God *conceptualizes* which worlds are feasible based on his divine will.¹⁶⁵ Molinism does not violate God’s omnipotence since being all-powerful simply includes the possible or feasible and excludes the impossible (e.g., God cannot make a married bachelor, a round square, or a causally determined morally responsible individual). Nor does God’s conceptualization of feasible worlds require those worlds to already be in some sort of necessary prior existence (which negates a common straw man fallacy held by determinists that conflate divine conception with divine perception). Using middle knowledge, God creates via divine decree, after which he then has *free knowledge* of the actual world.¹⁶⁶ The divine foreknowledge of God follows directly from his middle knowledge of all true counterfactuals and his divine creation decree to actualize this world.¹⁶⁷ Through this Molinist account, a divine Creator condescends to co-actualize events with human moral agents yet still maintains the ability to foreordain that which he wills *through* the use of creaturely freedom.

¹⁶³ Peter Van Inwagen, “Moral Responsibility, Determinism, and the Ability to Do Otherwise,” *The Journal of Ethics* 3, no. 4 (1999): 346, <https://www.jstor.org/stable/25115624>.

¹⁶⁴ William Lane Craig, “God Directs All Things: On Behalf of a Molinist View of Providence,” in *Four Views of Divine Providence*, ed. Stanley N. Gundry and Dennis W. Jowers (Grand Rapids, MI: Zondervan, 2011), 83.

¹⁶⁵ Ibid.

¹⁶⁶ Ibid.

¹⁶⁷ Ibid., 85.

Therefore, in place of determinism, God directs all things, and humankind is morally responsible by employing final causality.

A biblical exemplar of God's perfect middle knowledge is evident in 1 Samuel 23:9-13 as David is in Keilah. As Saul pursues, David enquires of God through the ephod of Abiathar first whether Saul will come down to Keilah and second if the citizens of Keilah will surrender David and his men unto Saul. The LORD affirms both scenarios as true counterfactuals, but David left Keilah, and the events were never actualized.

In contrast, universal, divine, causal determinism remains incompatible with moral responsibility (or at best defaults to apophasis and the inability to scrutinize God). First, the Bible is replete with examples in which individuals are held accountable for their moral choices. Scripture affirms "genuine indeterminacy and contingency" in support of moral agency and indeterminism while buttressing divine sovereignty and providence as well (as supported by Molinism).¹⁶⁸ Second, "universal causal determinism cannot be rationally affirmed" given that, if true, belief in causal determinism obtains only if an individual is causally determined to think so.¹⁶⁹ Third, under universal causal determinism, God becomes the efficient cause of sin. William Lane Craig interjects, "If it is evil to make another person do wrong, then in this view God not only is the cause of sin and evil, but he becomes evil himself, which is absurd. By the same token, all human responsibility for sin has been removed, for our choices are not really up to us: God causes us to make them."¹⁷⁰ Fourth, universal causal determinism relegates human moral agency to an instrumental cause.¹⁷¹ Finally, "[u]niversal, divine determinism makes reality

¹⁶⁸ William Lane Craig, "Response to Paul Kjoss Helseth," in *Four Views of Divine Providence*, ed. Stanley N. Gundry and Dennis W. Jowers (Grand Rapids, MI: Zondervan, 2011), 60.

¹⁶⁹ Ibid.

¹⁷⁰ Ibid., 61.

¹⁷¹ Ibid.

into a farce. The whole world becomes a vain and empty spectacle. There are no free agents in rebellion against God, whom God seeks to win through his love, and no one who freely responds to that love and freely gives his love and praise to God in return.”¹⁷²

Under the Molinist view, the perfect middle knowledge of God is biblical. The sovereignty of God is manifest. Human moral responsibility and accountability remain rational. Moreover, basic human experience supports an individual’s moral agency.

By the grace of God, all of creation, including being human with the imbued *imago Dei* in the original state of integrity, simply *is* good (Genesis 1:31). While such a grace allows humankind to enter a trusting relationship with the God of the universe, moral agency also allows for rebellion against God. Indeed, regardless of whether the genre for the book of Genesis is a history with a literal six-day creation account or mythohistory, which integrates Ancient Near Eastern writing techniques of figurative stories to tell a history, theistic anthropology concludes that the disposition of Adam to sin imputes to every individual. Romans 5:12 confirms that “just as sin came into the world through one man, and death through sin, and so death spread to all men because all sinned.” Academics predominantly regard the original sin from Genesis as self-exaltation (i.e., pride), but concupiscence or unbelief are also considerations.

In humankind, a state of corruption desecrates the original state of integrity. A corrupted ability in which all are now unable to not sin (*non posse non peccare*) replaces the ability of individuals to not sin (*posse non peccare*). However, the current state of corruption and humankind’s inability to not sin should not be mistaken for a complete and utter inability to respond to God’s revelation with acts of goodness and rightness (*non posse bene vel rectum*) even while positionally in a state of corruption. If this were the case, practical experience should

¹⁷² Craig, “Response to Paul,” 62.

dictate that all unbelievers cannot respond positively to nature or conscience. Meanwhile, the Christian awaits an eschaton that restores the state of integrity in which glorified humankind will then be unable to sin (*non posse peccare*) due to their finalized relationship with God.

Following the “Romans Road” for Christian soteriology, every human being, as a consequence of rationality and moral agency, sins and is separated from a perfect God by their sin (Romans 3:23). The penalty of sin is spiritual death, but in addition to creation through yet another grace of God, eternal life is made possible through Jesus Christ (Romans 6:23). The love of God is demonstrated “in that while we were still sinners, Christ died for us” (Romans 5:8). God triumphs over death through the Resurrection of the second person of Jesus Christ as the substitutionary atonement for the sins of all humankind. The innocence of Christ imputes positional righteousness to the conditionally guilty as predicated in Romans 10:9, “if you confess with your mouth that Jesus is Lord and believe in your heart that God raised him from the dead, you will be saved.” Finally, Romans 8:1 teaches, “There is therefore now no condemnation for those who are in Christ Jesus.” This retributive theory of justice in which the guilty deserve punishment allows for the will of God through the penal substitution of Christ.

After salvation, the baptism and the indwelling of the Holy Spirit are works of grace through faith in Christ. The body of Christ is a community that accepts all with such saving faith. 1 Corinthians 12:13 stipulates, “For in one Spirit we were all baptized into one body—Jews or Greeks, slaves or free—and all were made to drink of one Spirit.” This passage emphasizes that through the third person of God, the corporate body accepts individuals. Christians provide their gifts in service while simultaneously being edified and ministered to in their weaknesses by the Church. Romans 8:9-10 expounds, “You, however, are not in the flesh but in the Spirit, if in fact the Spirit of God dwells in you. Anyone who does not have the Spirit of Christ does not belong

to him. But if Christ is in you, although the body is dead because of sin, the Spirit is life because of righteousness.” The Holy Spirit is the initiator of regeneration for all Christians.

However, the doctrine of *baptism by the Holy Spirit* is separate from the doctrine of the *fullness of the Holy Spirit* (i.e., the Spirit-filled life). Paul describes three distinct types of individuals in 1 Corinthians. The *natural* (ψυχικός, “psychikos”) man does not receive the gifts of the Spirit of God” (2:14). The *spiritual* (πνεύματος, “pneumatōs”) man “judges all things” for he has the “mind of Christ” (2:15-6).¹⁷³ Finally, the *fleshly* (σαρκίνους, “sarkinois”) men of the Corinthian Church are “infants in Christ” (νηπίους ἐν Χριστῷ, “nēpiois en Christō”), while at the same time “brothers” (ἀδελφοί, “adelphoi”), thereby acknowledging them as fellow Christians (3:1).¹⁷⁴ While natural man is not able to understand the gifts of the Spirit, fleshly individuals may be considered Christians that do not enjoy the benefit of the fullness of the Holy Spirit as they continue to live with the “jealousy” and strife” characterized by immature Christians (3:3). Paul continues to contrast the spiritual from the fleshly Christians in 1 Corinthians 3:11-15 declaring that the works of the fleshly Christian will be “burned up...though he himself will be saved.”

William Lane Craig suggests two reasons as to why Christians fail to live Spirit-filled lives. The first is “a lack of total commitment.”¹⁷⁵ The parable of the sower in Mark 4:3-9 describes seeds sown in four types of soil: along the path, rocky ground, among the thorns, and fertile soil. Craig explicates that the third type of soil, seeds sown among the thorns, fail to produce fruit but still grow representing Christians that live in the flesh. Jesus explains that “the

¹⁷³ Jay P. Green, Sr., ed. *The Interlinear Bible* (Peabody, MA: Hendrickson Publishers, 1986), 885.

¹⁷⁴ Ibid.

¹⁷⁵ William Lane Craig, “Doctrine of the Holy Spirit (Part 6): The Filling of the Holy Spirit,” November 9, 2016, *Defenders Podcast: Series 3*, paragraph 4, <https://www.reasonablefaith.org/podcasts/defenders-podcast-series-3/s3-doctrine-of-the-holy-spirit/doctrine-of-the-holy-spirit-part-6>.

cares of the world and the deceitfulness of riches and the desires for other things enter in and choke the word” (Mark 4:19). The cares of the world inhibit Christians through the trials and tribulations of life. The deceitfulness of riches emphasizes the fleshly pursuit of monetary gain, power, and affluence. Moreover, the desires for other things underscore idolatrous passions that supersede God and his kingdom.

The second reason Christians fail to live filled with the Spirit is an over-dependence on self-effort. “Without the filling of the Holy Spirit...the Christian life is reduced to legalism and grinding self-effort. Therefore, the non-Christian will actually often be happier than the Christian who is living a defeated Christian experience in the power of the flesh.”¹⁷⁶

Suppose God created humankind in his image as an original goodness and provides for a moral code of living derivative in divine commands as rightness. In that case, living within the boundaries of God’s will incurs eternal and possibly temporal benefits and blessings. The Christian, living in the fullness of the Spirit, is not called to simply “put on” a new way of life, but to first “put off your old self” to be “renewed in the spirit of your minds” (Ephesians 4:22-3). The new life of the Spirit-filled individual includes equipping oneself with: (1) truth through study, prayer, and contemplation, (2) righteousness through obedience, (3) the gospel of peace as a firm foundation, (4) faith as a product of belief and trust in God, (5) salvation through the atoning work of Christ, and (6) the Word of God as the sword of the Spirit (Ephesians 6:13-7).

For the Christian, R/S do not just incidentally provide positive effects on D&A. R/S are normative values of goodness and rightness that individuals practice in response to God. The notion of an ideal normative standard depends on morality given the preferences for what is “good” and “right” as opposed to “evil” and “wrong.” This connection between R/S and morality

¹⁷⁶ Craig, “Holy Spirit (Part 6),” paragraph 28.

is not simply using the descriptive results of science to draw normative judgments (thereby committing the “is/ought fallacy”). A design inference for LIFE, neurocognitive mechanisms, and biological systems discussed in D&A ultimately leads to theism, which supplies normative ideals assuming the historicity of Jesus of Nazareth. In Christianity, axiological moral values are objective and grounded in the nature of God, while deontological moral duties are derivative of divine commands. The will of God is coherent and complementary to his nature, thereby supporting divine voluntarism grounded in the attributes of God. “Good” is therefore defined denotatively, with God analogically as the referent. “Evil” is a privation of the standard of goodness (*privatio boni*) and is, therefore, a consequence of sin. “Right” refers to a moral obligation directly from God or indirectly through agents created by God. “Wrong” is a failure to meet a moral obligation. Moral intuition is properly basic knowledge through the internal guidance of the individual conscience as a grace of God.

Consequently, the ontological basis of objective morality is modeled divinely from the top-down, while the epistemology of morality allows for knowledge of good, evil, right, and wrong from the ground up. Individuals may know and subscribe to objective moralism even if such knowledge is not grounded in a correct ontology for morality. Additionally, through their God-given conscience and moral intuition, every individual recognizes objective goodness and rightness but fails through their efforts to maintain such a standard. The difference between this moral demand and moral capacity, or “moral gap,” is only bridged through the power of God as fleshly desires yield to progressive spiritual maturity.

God is also the initiator of all interactions of divine revelation as *a* prevenient grace. Subsequently, anything and everything good comes from God (James 1:17). Prevenient in this sense is an academic semantic rather than a denominational semantic. Christian theologians of

various denominations agree that God's initial grace and calling come before any human response and is, therefore, "prevenient." The ramifications of such prevenient grace are that everything created by God is a goodness. The ability to visualize a mountain sunset while smelling the pine trees, feeling the breeze, and hearing the roar of a waterfall each exemplify a complex sensory input in response to the general revelation of God. Responses to God's revelation in conscience include returning a lost item while suppressing the temptation to steal, telling the truth instead of a lie, and following rules instead of cheating.

Additionally, positive responses to God's revelation through the written and living *logos* provide eternal benefits through saving faith in Jesus Christ with a subsequent relationship of trust yielding the fruits of the Spirit. While no individual seeks God in their base nature, everyone has the benefit of knowing and responding to God through at least creation and conscience and therefore are held sufficiently accountable as moral agents (Romans 1:20, 2:14-5, 11:19-24). General revelation, therefore, serves to bring all into accountability through a general knowledge of God with the intent to lead individuals in a desire for a relationship with God through special revelation.

A Response to Divine Revelation as a Degree of Relative Holiness

For each individual, a Response to Divine Revelation (RDR) may be positive or negative to God in nature, conscience, the written *logos*, the living *logos*, or particular dreams/visions. Likewise, each circumstance throughout any given day allows for a positive or negative RDR. RDRs are similar to Keith Yandell's "virtue circumstances" theodicy in which God provides sufficient circumstances for each individual to choose virtue or vice.¹⁷⁷ Each *positive* RDR, as a

¹⁷⁷ Keith E. Yandell, "Tragedy and Evil," *International Journal for Philosophy of Religion* 36, no. 1 (August 1994): 9, <https://www.jstor.org/stable/40021236>.

response to God, is a positive virtue circumstance that allows for a corresponding Degree of Relative Holiness (DRH). A holy act is good and right, with both derivatives of God. While only the perfect holiness of God is sufficient for salvation, DRH is an academic semantic to explicate responses to D&A, not as a discussion of soteriology. Assuming moral agency with libertarian freedom, an individual may perform a good and right action as a DRH from an RDR without being *positionally* holy. Comparable to George Schlesinger's theodicy with an infinite number of degrees of desirability of a state (DDS) that separate an individual from God, there is an infinite number of DRHs that separate individuals from the holiness of God.¹⁷⁸ No number of DRHs merit justification from sin.

Nevertheless, positive responses to God's revelation incur benefits of mind, body, and spirit through good and right behavior (DRHs). The critical distinction for all DRHs is that they are all responses to God's revelation. Indeed, the fact that individuals even have the rational and moral capacity (through the gift of the *imago Dei*) to choose a virtue circumstance is itself part of the original goodness of God's creation. Conversely, negative RDRs that are characterized as evil or wrong result biblically in both consequences and punishments for sin.

Implicit in a synthesis of the normative ideal of RDRs and DRHs that is protective from D&A is the rationalization and justification of four groups of individuals to systematize theological doctrines regarding D&A properly: namely the unhappy atheist (UA), the happy atheist (HA), the unhappy Christian (UC), and the happy Christian (HC). "Happy" in this semantic refers to the immunization or insulation from the effects of D&A. Assuming Christian orthodoxy, two of these groups are straightforward in their justification. The Unhappy Atheist

¹⁷⁸ George N. Schlesinger, "The Problem of Evil and the Problem of Injustice," *Tradition: A Journal of Orthodox Thought* 13, no. 2 (Fall 1972), 46, <https://www.georgeschlesinger.org/wp-content/uploads/2014/12/tradition-problem-of-evil.pdf>.

(UA) and Happy Christian (HC) logically follow respectively as negative and positive RDRs with the correlating negative and positive DRHs. Unrelenting unrepentant sin steepens humankind's original created state of integrity in the evil and wrongness that results in a state of corruption that metastasizes to the mind, body, and spirit. The HC enjoys the fruits of the Spirit that include love, joy, peace, patience, kindness, goodness, faithfulness, gentleness, and self-control (Galatians 5:22-23), while the UA suffers the consequences and punishments for negative RDRs.

Similar to the UA, the UC may therefore be adversely affected by D&A through negative RDRs in mind, body, and spirit even while positionally benefiting from the imputed righteousness/holiness of Christ. The follower of Christ is not immune from living in the flesh by resisting or even quenching the Spirit of God working within, "for the flesh sets its desire against the Spirit" (Galatians 5:17). While living in the flesh, the danger of apostasy is an ever-present reality. Paul and the writer of Hebrews reassure believers of the mercy of God *provided* they continue in God's kindness through belief in and obedience to Christ; otherwise, they too will be cut off from God (Romans 11:22; Hebrews 2:1, 4:6, 4:11). Moreover, redemption through Christ is still possible for unbelievers with the proviso that "they do not continue in their unbelief... for God has the power to graft them in again" (Romans 11:23).

As an object lesson for the UC or apostate, William Lane Craig provides testimony from a frustrated Christian minister that abandoned his faith to become a non-Christian.¹⁷⁹ Self-efforts of living without the empowerment of the Spirit tarnish the minister's gift of salvation. Prior to apostasy, he is wracked by guilt, shame, and despair while unable to achieve the standards of Christianity in his power. After his apostasy, he describes his happiness and freedom given that

¹⁷⁹ Craig, "Holy Spirit (Part 6)," paragraph 29.

he is “guilt-free” and because his “ethical standards” are no longer an obstacle. Craig elaborates, “I think the fundamental failure of this ex-Christian is that he did not understand that the Christian life is primarily about *being*, not *doing*.”¹⁸⁰ The life of the redeemed in Christ is first and foremost about *being* in a positionally holy relationship with God through the atonement of Christ. The performance of life is a distant and imperfect consolation prize through the discipline of living in the Spirit that completes in the full glorification of the eschaton.

Conversely, the HA is insulated from D&A by participating in positive RDRs in mind, body, and spirit without subscribing to the ontology of divine revelation or even mind/body dualism, thereby denying the Creator through self-exaltation. The HA may also limit the effect of general revelation through the searing or corruption of the conscience. Therefore, the unbeliever may live and act in accordance with God’s nature and commandments or outright ignore any internal drive for morality, but the motivation is derivative of egoism and pride.

An Object Lesson: Did Hitler Love His Mother?

As a potential object lesson for a positive RDR and a correlating DRH, Adolf Hitler, the *Führer* (“Leader”) of Nazi Germany, may be considered. As a notorious atheist, if Hitler can respond positively to God’s divine revelation through creation even if rejecting the ontology of goodness/rightness, might this positively affect his mind, body, and spirit? Likewise, if Hitler rejects God’s internal general revelation through conscience, might he suffer direct consequences because of such sin?

As a positive RDR, history notes that Adolf Hitler does love his mother. In *Mein Kampf*, Hitler expounds, “I had respected my father, but I loved my mother.”¹⁸¹ This statement explicitly

¹⁸⁰ Craig, “Holy Spirit (Part 6),” paragraph 33.

¹⁸¹ Adolf Hitler, *Mein Kampf* (New York, NY: Reynal & Hitchcock, 1941), 25, Internet Archive Ebook.

notes an affection for his mother that is implicitly lacking for his father. As a young man, Adolf moves home from studying art in Vienna to care for his mother, Klara, when faced with terminal breast cancer.

If God initiates all acts of goodness and rightness by human individuals, then such love and devotion by Adolf Hitler is a positive RDR and, therefore, a DRH. Likewise, if the counterargument is that Hitler acts only in self-interest, then the simple act of caring for another person in need may still be considered as a normative goodness. Again, Hitler is *not* positionally holy by responding/subscribing to God and the epistemology of goodness and rightness. An act of goodness and rightness is not salvific as infinite degrees of holiness separate the individual from God.

If prolonged and pathological, Hitler's response to his mother's death may also be a negative RDR. Klara's physician, Eduard Bloch, describes Hitler's grief at his mother's death, "In all my career, I have never seen anyone so prostrate with grief as Adolf Hitler."¹⁸² Indeed, some events for some people result in such grief that hardening of heart and mind against any positive RDRs, in turn, limits DRHs. What if an inappropriate grief response to his mother's death furthers Hitler down the path of corruption and hard-heartedness that eventually leads to the genocidal murder of the Holocaust?

Hitler also makes several statements regarding the conscience consistent with a negative RDR. If the conscience is instrumental in convicting individuals of good/evil and right/wrong predicated in God's value and commands, then ignoring or denying one's conscience, while further separating one from God, may either result in privation of goodness/rightness such as

¹⁸² Ian Kershaw, *Hitler: A Biography* (New York, NY: W. W. Norton & Company, 2008), 15, Google Scholar.

D&A or provide pathological insulation to D&A. A broken or absent conscience describes the individual psychopath with antisocial personality disorder (AsPD) and explains why such an individual may be “immune” or less affected by D&A. In accord with either the denial or pathological absence of conscience, Hitler, in his controversial conversations with Hermann Rauschning, states, “The Ten Commandments have lost their validity.... Conscience is a Jewish invention. It is a blemish, like circumcision.”¹⁸³ Then in a crescendo of self-exaltation, Rauschning also quotes Hitler, “providence has ordained that I should be the greatest liberator of humanity. I am freeing men from the restraints of an intelligence that has taken charge; from the dirty and degrading self-mortifications of a chimera called conscience and morality, and from the demands of a freedom and personal independence which only a very few can bear.”¹⁸⁴ Hitler then leads Nazi Germany in the Holocaust with his “Final Solution” as the genocide of six million European Jews from 1941-45.

This lesson exemplifies the ability of a single individual, in this case, Adolf Hitler, to exhibit a positive response to divine revelation as a DRH through love for his mother, yet then deny his conscience in the extermination of millions of human beings. Admittedly, while the practice of historical reflection on psychopathology, or psychopathography, to ascertain mental illness is poorly substantiated, Hitler as either a HA or UA is undoubtedly consistent with the concept of RDR and DRH. Whether through mental illness or pathological immunization and insulation from the effects of sin through the searing or denial of his conscience, Hitler personifies the state of corruption of fallen humankind and the normative evil and wrongness inherent in his separation from God.

¹⁸³ Hermann Rauschning, *The Voice of Destruction* (New York, NY: G. P. Putnam’s Sons, 1940), 233, Internet Archive Ebook.

¹⁸⁴ *Ibid.*, 234.

Happiness and Holiness

Positive responses to God's revelation bestow benefits and blessings in mind, body, and spirit. If in accord with God's nature, then such a response is good. If obedient to God's divine commands, then that response is right. The discipline of both goodness and rightness *separates* an individual from corruption as a practice of holiness. This separation from the world's depravity is a command from God for believers to be holy because God himself is holy (Leviticus 19:2, 1 Peter 1:16). However, God is not a killjoy. The boundaries set by God's nature and his commands provide for the welfare, hope, and eternal future of those seeking his will (Jeremiah 29:11). However, attempting the discipline of holiness in one's power is incomplete. Progressive sanctification by being Christ-like is only possible through the fullness of the Holy Spirit.

Pursuing eternal happiness through worldly pleasure unbounded by holiness may be equated with chasing after the wind: ever elusive, ever distant, and ever out of reach (Ecclesiastes 1:14). Certainly, a degree of temporal happiness as a grace of God through DRHs as RDRs is possible for the happy atheist through naturalism and moralism while still denying God. Indeed, social science emphasizes that individuals may even synthesize happiness. Psychologist Martin Seligman provides the acronym "PERMA" for five elements that drive contentment and well-being: (1) *positive emotion* to include love, joy, peace, and gratitude, (2) *engagement* in external tasks and projects, (3) *positive relationships*, (4) *meaning* through a bigger purpose than oneself, and (5) *achievement* through accomplished tasks.¹⁸⁵

¹⁸⁵ Martin E. P. Seligman, *Flourish: A Visionary New Understanding of Happiness and Well-being* (New York: Free Press, 2011), 24, Google Scholar.

According to modern secular psychology, happiness is a means, not an end; a discipline, not an imposition; and even a synthesis, not an accident. In a TED Talk video from 2012, Harvard psychologist Dan Gilbert observes through a series of experiments with rating/owning prints of famous art that individuals can “really, truly [change] their affective, hedonic, aesthetic reactions...” to life’s circumstances and events.¹⁸⁶ “It turns out that freedom, the ability to make up your mind and change your mind, is the friend of natural happiness... but freedom to choose, to change and make up your mind, is the enemy of synthetic happiness.”¹⁸⁷ In other words, limiting choice through boundaries reduces anxiety and unhappiness.

Setting boundaries does not mean eliminating all choices and preferences. The primary risk for unhappiness is from the unbounded condition. To allow the mind to manufacture numerous conditional scenarios in a constant search for the “best choice” results in insecurities and second-guessing decisions. Gilbert concludes, “When our ambition is bounded, it leads us to work joyfully. When our ambition is unbounded, it leads us to lie, to cheat, to steal, to hurt others, to sacrifice things of real value. When our fears are bounded, we’re prudent. We’re cautious. We’re thoughtful. When our fears are unbounded and overblown, we’re reckless, and we’re cowardly.”¹⁸⁸

While Gilbert’s analysis of the unbounded condition concerning the synthesis of happiness seems to be accurate, it remains incomplete. What exactly are the boundaries? Is it simply the limiting of choice or restricting conditional thought? The unbounded condition may indeed result in unhappiness, and if not addressed, to D&A. The temporal pursuits of the happy

¹⁸⁶ Dan Gilbert, “The Surprising Science of Happiness,” filmed February 2004 in Monterey, CA, TED video, 13:00, https://www.ted.com/talks/dan_gilbert_the_surprising_science_of_happiness?language=en.

¹⁸⁷ Ibid., 13:41.

¹⁸⁸ Ibid., 19:50.

atheist may provide some transitory insulation and immunization to the effects of D&A through moralism, naturalism, or pathological distortion of conscience. However, for the Christian, God's holy goodness and rightness define the boundaries for happiness and contentment.

For the Christian, positively responding to the entirety of God's revelation provides not just transitory succor but an eternally restored relationship with God. The Seligman psychological well-being criteria tacitly support Scripture: (1) Surely for the Christian, the fruits of the Spirit just are *positive emotions* as well as positive disciplines (Galatians 5:22). (2) *Engagement* for the Christian includes a call to deny self and live for God and others (Galatians 2:20, Mark 12:28-31). (3) *Relationally*, Christians are instructed to partake of an incendiary fellowship in the body of Christ (1 Thessalonians 5:11). (4) *Meaning* for the Christian is ultimately fulfilled in the glorification of God (1 Corinthians 10:31). (5) Finally, any Christian *achievement* is recognized as a grace of God (through an RDR), prompting humble thanksgiving from the penitent (2 Corinthians 10:17-18).

Scripture provides many exhortations in living a holy and, therefore, happy life in Christ. Happiness does not mean an easy, painless, or stress-free life (James 1:2). The Christian may remain joyful even in the face of trials and tribulations through the knowledge that such testing blesses the individual with maturity and development. The word "blessed" (μακάριοι, "makarioi") in the New Testament provides a synonym for happy. The teachings of Jesus in the Beatitudes instruct followers in eight blessings in which, if obedient to God's commands, individuals will be "happy," "rich," or "blessed" if not in this world, then the eternity to come (Matthew 5:3-12). All of the instructions are in the pursuit of holiness.

The Word of God also teaches the doctrine of renewal of the mind for holiness. Exhortations include the avoidance of conforming to the world while discerning the will of God

(Romans 12:2), taking captive each thought in obedience to Christ (2 Corinthians 10:5), the perfect peace of those mindful of God (Isaiah 26:3), the steadfastness of those that meditate on Scripture (Psalm 1:1-3, 119:11), the renewal of the spirit through the transformation of the mind (Ephesians 4:20-24), and the abstinence of evil while holding fast to what is good (1 Thessalonians 5:21-2). God's entire purpose for salvation in Christ is that whosoever believes in him should also be holy and blameless in him (John 3:16; Ephesians 1:4).

Paul also provides a concise recipe for a holy/happy life as he encourages the follower of Christ to rejoice in the Lord always, be anxious for nothing, be thankful in prayer and supplication, and to think only about the lovely, admirable, excellent, and praiseworthy (Philippians 4:4-9). This Pauline therapy of positive thinking predates Beck's CBT by approximately 1,900 years. Nevertheless, Paul entreats that the reward for such discipline is the relationship and closeness of the God of peace, not just a perfunctory means to happiness. Paul has found the bounded condition for happiness within the holiness of God which delivers an authentic and enduring solution to not just the problem of D&A but a restored fellowship with God. "Not that I am speaking of being in need, for I have learned in whatever situation I am to be content. I know how to be brought low, and I know how to abound. In any and every circumstance, I have learned the secret of facing plenty and hunger, abundance and need. I can do all things through him who strengthens me" (Philippians 4:11-13).

The study on happiness and holiness leads to two practical applications. First, holiness is a solution to D&A and unhappiness. Holiness includes all responses to general and special revelations from God, whether it is the benefit of sunshine, physical exercise, a moral virtue, or a response to Jesus Christ. If in pursuit of happiness and unbounded by God, then individuals will compromise holiness through sin. However, if holiness becomes the objective through the power

of the Holy Spirit by faith in Christ, then a byproduct of holiness is the synthesis of happiness in all circumstances and immunity to D&A.

Second, justification through Christ leads believers to imputed holiness, not just in this worldly existence but in eternity to come. Holiness is “the source of the justice and wrath of God which comes upon people who are separated from him and apart from Christ. But, ironically, for those who are in Christ, God’s holiness becomes the source of their salvation.”¹⁸⁹ Salvation through Christ provides personal holiness as a solution to D&A.

¹⁸⁹ William Lane Craig, “Doctrine of God (Part 19): Application of God’s Holiness,” July 28, 2015, *Defenders Podcast: Series 3*, paragraph 37, <https://www.reasonablefaith.org/podcasts/defenders-podcast-series-3/s3-dctrine-of-god-attributes-of-god/doctrine-of-god-part-19>.

Chapter 5

Conclusion

The science on D&A affirms the positive effects of R/S in roughly 72 to 85 percent of studies. The neurocognitive structures implicated in the pathology of D&A include dysregulated areas in the PFC (e.g., subgenual ACC), basal ganglia (e.g., striatum and thalamus), and temporal lobe (e.g., hippocampus and amygdalae). Congruent with the Christian concept of fellowship and community, academic studies emphasize the protective effects of organizational religion over non-organized religion. A concordance of religion among mother and child reduces D&A, as do internal religious coping mechanisms to include trust in God, prayer, reading the Bible, and active fellowship within a church community. A healthy self-image and decreased mastery of self mitigate goal-striving stress by the reliance on God. The practitioner of R/S also incurs less suicidality, impulsivity, aggression, and substance abuse.

Therapy for D&A is shifting from first-line pharmacotherapy to psychotherapies such as CBT. Religion-specific and computer-assisted CBT reveal the influence on D&A of underlying normative values in religion and the universality of the pathological condition of D&A. The discipline of the mind garners benefits in mind, body, and spirit. Contentment and happiness may be synthesized in the various vicissitudes of life through conditional boundaries while avoiding excessive ruminations on subjunctive possibilities. The archetypes for CBT, the discipline of the mind, and bounded conditions conducive for happiness are contained and preserved in the Word of God.

As a result of a cumulative abductive inference to examined worldviews, theism provides the best explanation for the effects of R/S on D&A by: (1) metaphysical deductive philosophical conclusions, (2) the inductive scientific data on D&A, and (3) abductive scientific conclusions

using a design inference. Methodological naturalism for all observed effects of scientific inquiry begs the question either by restrictively defining the scientific method or by circularly assuming the conclusion to justify the premise. There is no *a priori* rationale for excluding the possibility of intelligent design as a possible cause for observed physical effects. Intelligent design, therefore, suffices as a scientific conclusion even if there are subsequent supernatural implications as well.

Philosophical deductive reasoning through observations of God's general revelation argues for theism in general and indirectly as the best cause for the data on D&A and R/S. God is the best explanation for Leibnizian contingency and why there is something rather than nothing, for Kalām cosmology with the beginning of the universe, for objective moral values and duties, for the fine-tuning of the universe, and the grounding of abstract objects.

The scientific data on the positive effects of R/S on D&A provides inductive results to support a cumulative abductive case for theism. Since there is no logical commitment to methodological naturalism, future studies on D&A may benefit from analysis of RDRs, DRHs, bounded conditions, and overall personal holiness in the lives of practitioners and nonpractitioners of R/S. Studies on RDRs in D&A may further stratify the differing responses of religious groups, including progressively sanctified Christians. Social media investigations regarding the unbound condition and boundaries placed by holiness may also provide insights on D&A. R/S is edifying to the afflicted because God exists, and it serves God's will for humankind to respond to his revelation through R/S. Moral relativism, neo-Darwinian evolution, and SM fail to explain the repeatable evidential data adequately.

Abductively, Dembski's explanatory filter leads to a design inference regarding LIFE and all neurocognitive mechanisms through (1) specified complexity of DNA, (2) the inability of

materialism to overcome the NFL theorems and complexity barrier of LIFE, (3) the irreducible complexity of biochemical, cellular machinery, (4) the improbability of any naturalistic mechanism to produce a *de novo* protein fold from nothing, and (5) the dependency graph of life supports common design over common ancestry. The hierarchy of biological systems is ontologically basic in which more complex systems emerge from simpler systems. In contrast, materialism fails rational affirmation given that cognition has a prerequisite determinism from mere chemical/physical processes. As the best materialistic explanation for LIFE, D&A, and R/S, Neo-Darwinian evolution still fails to adequately explain something from nothing, life from unlife, complexity from simplicity, information from chaos, and rationality from irrationality.

Theism provides the best justification for the deductive, inductive, and abductive data. Atheistic SM relies on the existence of matter before a mind yet fails to answer the standard metaphysical questions on existence. Other theistic possibilities, including polytheism, deism, and finite godism, are also refuted. The historicity of Jesus of Nazareth and the illogical infinite regress of many gods lead to polytheism's rejection. Deism fails given the increase in information needed to develop DNA after original cosmogony from a prolonged liquid plasma state, while information theory refutes any front-loading of information from theistic/deistic evolution. Finite godism lacks quantification for the nature of God and is primarily a theodicy defense. Finally, pantheism and panentheism fail for lacking personal agency necessary for creation, cosmogony, and overall causality. Theism is not an argument from ignorance but a conclusion based on the evidence.

Theism, in general, leads to Christian theism, in particular, using a historiographical minimal facts approach. Christian theism is the best explanation for the historicity of the Jesus of Nazareth to include the crucifixion, empty tomb, eyewitness accounts, the fidelity and

martyrdom of eleven disciples with John exiled to Patmos, the conversion of Paul, the conversion of James, and the rapid spread of Christianity throughout the known world.

D&A in Christian theism is a privation of the original goodness and rightness of creation. Humankind displays the image of God with a rational soul and moral accountability. But falling short of the glory of God, all individuals sin and separate themselves from a holy God. D&A are symptoms of the corruption of mind, body, and spirit in need of redemption. To restore the integrity of creation and humankind's relationship to God, individuals must attain holiness that they cannot merit by the "filthy rags" of their efforts (Isaiah 64:6). Salvation and restoration are through the imputation of the work of Christ by faith; this includes the active sinless obedience of his life and the passive sacrificial obedience of his atoning death on the cross.

Seeking restoration, God reveals himself to all through general revelation in nature and conscience with the telos of bringing those to special revelation through the written and living *logos*. Any virtue of goodness and rightness is a positive response to divine revelation, or a positive RDR, while every vice, a negative RDR. All individuals are accountable for their responses to God, yet they still may not take credit for such virtue derivative of God. Every positive RDR is a degree of relative holiness, or DRH, that cannot merit salvation and remains infinitely separated from the holy standard of God. DRHs as a positive RDR, do incur benefits in mind, body, and spirit. Good and right living separate individuals from the fleshly desires that corrupt the spirit of humankind. The separation from the world through the goodness and rightness of correct living (orthopraxy), correct opinions (orthodoxy), and correct emotions (orthopathy) in the standard of God is the very definition of personal holiness.

Degrees of relative holiness as a goodness or a rightness in response to God's revelation may indeed immunize or insulate an individual from D&A. For the atheist, transitory temporal

happiness may be known through positive responses to nature and conscience or the denial or corruption of the conscience. Conversely, the Christian living in the flesh may suffer tragically while failing to reap the benefits of their positionally restored status to God. How much more beneficial is the complete restoration to God through special revelation by active faith in Jesus Christ and acceptance of the Spirit? Scripture promises the peace of God that passes all understanding in all circumstances through the disciplines of holiness and living in the fullness of the Holy Spirit that guarantees an eternal, not temporal, security.

However, it is too facile to assert that everyone “just” needs to know and follow God to vanquish evil and wrongness from humanity. Every individual has daily instances of virtue or vice. The path of sanctification for the Christian abounds with trials and tribulations, setbacks and success, and rancor and repentance. God may use the evil and wrongness of rational souls with the moral agency to choose negative RDRs to develop, mature, and draw those seeking God to a restored relationship through Jesus Christ. God directs the free will decisions of humankind by his overall greater will to call a holy people to himself by justification through Jesus Christ.

The same grace of God that allows for redemption through Christ also permits rejection through rebellion. D&A exist as side effects of that rebellion. R/S provide protective effects through good and right living as positive RDRs. Degrees of relative holiness through positive RDRs, while providing solace and well-being on this side of the eschaton, fail to provide eternal redemption without the imputed righteousness of Christ. While D&A continue to afflict both the Christian and unbeliever, it is only through the atonement of Christ with the final imputation of holiness and the subsequent glorification of the body and spirit that humankind will conquer D&A. For “the dwelling place of God is with man. He will dwell with them, and they will be his people, and God himself will be with them as their God. He will wipe away every tear from their

eyes, and death shall be no more, neither shall there be mourning, nor crying, nor pain anymore, for the former things have passed away” (Revelation 21:3-4). The final solution for depression and anxiety is the completion of God’s redemptive plan through Christ Jesus.

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