Unity in the *Massa Peccati*: Original Sin and the Extended Evolutionary Synthesis

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Introduction

While the doctrine of original sin has been controversial since its earliest articulations, I posit in this essay that retaining a notion of original sin in the sense of systemic, inherited sin is essential for understanding the human situation as we find it in the twenty-first century. The doctrine provides an essential theological framework for comprehending the stubborn persistence of a variety of social and personal ills—inequality, poverty, environmental degradation, and the pernicious patterns of sexual violence and abuse that have been uncovered by the #MeToo movement.[1] In addition to arguing for the continued relevance of the doctrine of "original sin," a major task of this essay is to show how recent developments in evolutionary biology, specifically those expressed by proponents of the "Extended Evolutionary Synthesis" (EES), offer support to theological understandings of inherited, systemic sin. Ultimately, I marshal resources from a variety of places—Augustine, feminist theology, and evolutionary biology—to develop a way of thinking about inherited sin that is grounded in both the material and theological truths of creaturely life.

The Extended Evolutionary Synthesis

Charles Darwin argued that all living creatures are descended from common ancestors and that natural and sexual selection are the primary drivers of evolutionary change. However, Darwin

[1] #MeToo is a movement started by civil rights activist Tarana Burke in 2006. The hashtag #MeToo went viral on the internet through social media platforms in October of 2017, and has been used as a means by which individuals can share their stories of surviving sexual violence of various forms. *Variety* magazine states that in a period of 24 hours in October 2017, twelve million people shared their stories of surviving sexual violence followed by "#MeToo," and half a million people shared their stories on Twitter within the same period. Those numbers have continued to grow since that period last October, according to *Variety*. Burke describes the #MeToo movement by stating, "Everyday people—queer, trans, disabled, men and women—are living in the aftermath of a trauma that tried, at the very worst, to take away their humanity. This movement at its core is about the restoration of that humanity" (Tarana Burke, "#MeToo Founder Tarana Burke on the Rigorous Work That Still Lies Ahead," *Variety,* https://variety.com/2018/biz/features/tarana-burke-metoo-one-year-later-1202954797/#respond, retrieved on 7 October 2018).

was not equipped with knowledge of genetics, and so he lacked a plausible theory to explain the inheritance of traits.[2] According to Massimo Pigliucci, Darwin "flirted with" the ideas of Jean-Baptiste Lamarck, who argued that environmental factors could cause changes in an organism, and that these adaptations caused by the organism-environment interaction were transmittable to future generations—a process evolutionary biologists now refer to as "soft inheritance."[3] Though Darwin seemed at times open to Lamarkism, it fell into disrepute within scientific circles. The rejection of Lamarkism became only more entrenched when, almost a century after *The Origin of Species* was published, the principles of genetic inheritance discovered by the Augustinian friar and scientist Gregor Mendel and Darwin's principles of natural selection were combined into a unified theory. It was a group of "mathematically oriented biologists" in the early twentieth century including Ronald Fisher, J.B.S. Haldane, and Sewall Wright, who first demonstrated that Darwin's theory of adaptation through natural selection could be combined with Mendelian genetics into a unified theory to explain how adaptations occur and are transmitted in organisms.[4] The process of integrating, expanding, and adapting the theories of Darwin and Mendel continued through the theoretical work of scientists like Theodosius Dobzhansky, Ernst Mayr, George Simpson, G. Ledyard Stebbins, and Bernhard Rensch. In 1942, Julian Huxley published his *Evolution: The Modern Synthesis*, and the "Modern Synthesis" became the most common shorthand way of referring to evolutionary theory in the twentieth century.

Proponents of the Modern Synthesis have emphasized the following principles: random mutations cause genetic variations in species, populations evolve by "changes in gene frequency brought about by random genetic drift, gene flow, and especially natural selection,"

[2] Massimo Pigliucci and Gerd B. Muller, "Elements of an Extended Evolutionary Synthesis," in *Evolution—the Extended Synthesis*, eds. Pigliucci and Muller, Cambridge, MA: MIT Press, 2010, p. 5. See also E.V. Koonin, "Towards a Postmodern Synthesis of Evolutionary Biology," *Cell Cycle 8*, no.6 (2009), p. 1.
[3] Ibid.
[4] Ibid., p. 6.

and most genetic variations have "individually slight phenotypic effects so that phenotypic changes are gradual."[5] Recall that a *genotype* is the genetic "information" that an organism carries within its genome, and a *phenotype* is the composite of an organism's observable traits—including its behaviors, the shape of its body, its development, and its biochemical properties. The Modern Synthesis is a "gene-centric" theory. The belief that all inherited variations can be expressed in terms of genetic differences, and the rejection of anything that seems "Lamarckian," have been central facets of the Modern Synthesis.[6] Within this framework, genes were sometimes portrayed as the masterminds of evolutionary change, as if genes possessed agency and organisms were at the mercy of their genomes.[7] The Modern Synthesis suggested that genetic information moves in a one-directional way from DNA to RNA to proteins.

This focused attention on the role of genes in evolution has been helpful in many ways, and it has contributed to massive innovations in the field of evolutionary biology. However, among evolutionary biologists there is a growing appreciation of the fact that constituent elements of an organism, such as genes, are formed by and function within various intersecting systems over time, and that they can only be properly understood from within their given contexts, and this is what the Extended Evolutionary Synthesis emphasizes. Genes have many possible phenotypic effects, and the ones that ultimately manifest are largely dependent upon environmental factors.[8] Furthermore, phenotypes are "plastic," which means that a phenotype

[5] Douglas Futuyma, *Evolutionary Biology*, Sunderland MA: Sinauer (1986), p. 12.
[6] Eva Jablonka and Marion Lamb, "Transgenerational Epigenetic Inheritance," in *Evolution—the Extended Synthesis*, eds. Massimo Pigliucu and Gerd B. Muller, Cambridge: MIT Press (2010), p. 137.
[7] As an example, note Richard Dawkins' claim: "Now they swarm in huge colonies, safe inside gigantic lumbering robots, sealed off from the outside world, communicating with it by torturous indirect routes, manipulating it by remote control. They are in you and me; they created us, body and mind; and their preservation is the ultimate rationale for our existence. They have come a long way, those replicators. Now they go by the name of genes, and we are their survival machines" (Richard Dawkins, *The Selfish Gene*, 2nd ed., Oxford: Oxford University Press, 1989, pp. 19-20).
[8] Some genes are "monomorphic," meaning they generally do not vary in terms of how they are expressed from one person to the next. For example, monomorphic genes lead to humans having two eyes situated on the front of their face. Other genes, however, have "polymorphisms" [technically speaking, they have "two or more different possible alleles (alternate forms of a gene)"], which means that these genes can create genetic variation among

produced by a specific genotype can also change in response to its environment, and it seems that these accommodations to the environment may also be heritable through a phenomenon called "genetic accommodation."[9] There is not, then, a one-directional movement of causation from DNA to the phenotype, but rather, as Evan Thompson notes, "The causal chain between DNA sequences and phenotypic characteristics is too indirect, complex, and multifaceted for there to be any robust one-to-one relationship between them. Hence, no phenotypic characteristic can be said to be 'coded for' by DNA sequences."[10] Adding even further complication is the fact that "roughly 42%" of the human genome is composed of what are called "retrotransposons," and these retrotransposons are capable of "inserting new sequences of bases into a chromosome."[11] This means that not only is the expression of a gene often unpredictable and undetermined by the genome, the genome itself is not fixed. Genetic variation exists among different humans, but also within the same human over the span of a lifetime. This significantly complicates previous understandings of the role of genes as determinants of an organism's traits and behaviors. Genes do not determine phenotypes on their own, rather, the EES emphasizes "the role of constructive processes in development and evolution and reciprocal portrayals of causation."[12]

humans (different eye or hair color, personality tendencies, etc.). Cf. Rachel H. Salk and Janet S. Hyde, "Contemporary Genetics for Gender Researchers: Not Your Grandma's Genetics Anymore," *Psychology of Women Quarterly 36* (2012), p. 397.

[9] Cf. Kim Sterelny, "Novelty, Plasticity, and Niche Construction: The Influence of Phenotypic Variation on Evolution," in *Mapping the Future of Biology: Evolving Concepts and Theories*, ed. Thomas Pradeu, Anouk Barberousse, and Michel Morange, Dordercht: Springer (2009).

[10] Evan Thompson, *Mind in Life: Biology, Phenomenology, and the Sciences of the Mind*, Cambridge, MA: Harvard University Press (2010), p. 181.

[11] Salk and Hyde, "Contemporary Genetics for Gender Researchers: Not Your Grandma's Genetics Anymore," p. 397. According to Ian R. Adams, retrotransposons are "an abundant class of mobile genetic elements in mammalian genomes that contribute to genetic instability and variation in the population by integrating at new sites in the genome." Retrotransposons comprise approximately 40% of the sequenced mammalian genome, according to Adams, and these genetic elements cause instability in the genome by "jumping" to new locations in the genome (Adams, "Retrotransposons and the Mammalian Genome," in *Human Retrotransposons in Health and Disease*, ed. Gael Cristofari, Cham: Springer International Publishing (2017), p. 1).

[12] K. Laland, T.Uller, M.Feldman, K. Sterelny, G. Muller, A. Moczek, E. Jablonka, J. Odling-Smee, "The extended evolutionary synthesis: its structure, assumptions and predictions," *Proceedings Of The Royal Society B-Biological Sciences 282*, no. 1813 (2015), p. 1.

A key area of research within the EES is the study of "epigenetics," which is a term used to describe inherited changes in the expression of genes "that are not dependent on changes in an organism's DNA."[13] Epigenetics research emphasizes that parents pass on more than just their genes to their offspring—they also pass on "molecular switches," or cues for how genes should be expressed. Epigenetic changes typically happen within an organism because of contextual influences that could include intra-organism factors like specific enzymes or hormones that would provoke gene expression or silence. These contextual influences can also include factors outside the organism, such as parent to offspring interactions, social learning, symbolic communications, and the changes that an organism makes to its own environment or to the environments of other organisms.[14] Interactions between an organism and its environment can change the patterns of gene expression with an organism, and these changes leave "epigenetic signatures" on the genome, and these signatures can be inherited.

For example, some studies on the descendants of Holocaust survivors indicate that they were born with alterations to their biological stress response systems similar to the those developed by their ancestors who endured the trauma, and that these inherited epigenetic signatures may leave them more vulnerable to experiencing negative effects of stress.[15] In the words of Rachel Yehuda, a researcher in the area of epigenetics, some people "have a lot more to overcome because their biology has given their condition a firmer reality," especially descendants of groups with histories of prolonged trauma.[16] While epigenetics provides insights into how trauma can persist biologically for generations, it also provides reasons for hope since

[13] Eva Jablonka, "Cultural Epigenetics," *The Sociological Review 64* (2016), p. 46.
[14] Eva Jablonka and Marion Lamb, "Transgenerational Epigenetic Inheritance," p. 144.
[15] Cf. Mallory E. Bowers and Rachel Yehuda, "Intergenerational Transmission of Stress in Humans," *Neuropsychopharmacology 41* (2016).
[16] Rachel Yehuda, interview with Krista Tippett entitled "How Trauma and Resilience Cross Generations," recorded July 30th, 2015. Transcript available at https://onbeing.org/programs/rachel-yehuda-how-trauma-and-resilience-cross-generations/.

resilience and healing are also partially inheritable. Biological and molecular healing can also be passed on to future generations via the mechanisms of epigenetics.[17]

"Niche construction" is an area of study related to epigenetics that is also included as part of the EES. Changes to environmental "niches" that organisms make (beavers building dams, humans constructing cities, birds building nests, etc) impact selection pressures operative within that specific niche, which then impact the development of organisms within the niche, and these organisms then impact the environmental niche again in a dynamic reciprocal loop of causation that is referred to as "niche construction."[18] Niche construction theory emphasizes that all organisms "through their metabolisms, movements, behavior, and choices, partly create and partly destroy their environments. In doing so, they transform some of the selection pressures in the environments that subsequently select them."[19] The past is always with us since environments transformed by organisms are passed on to future generations, and this inheritance of environments with modified selection pressures is called "ecological inheritance."[20] Our ancestors bequeath to us not only genomes and epigenomes, but also ecological niches. While niche construction theory broadens how we think about inheritance, it also reveals a more dynamic process of evolution that emphasizes the agency of organisms who are active participants in evolutionary processes rather than passive recipients of selection processes.

The Extended Evolutionary Synthesis, therefore, presents a more robust picture of the dynamics of the interactions between genes and environments across the life span of individual organisms, species, and species across generations. It reveals the nuanced interplay between

[17] Ibid.
[18] For further reading about niche construction see F. John Odling-Smee, Kevin N. Laland, and Marcus W. Feldman, *Niche Construction: The Neglected Process in Evolution* (Princeton: Princeton University Press, 2003), as well as Thomas C. Scott-Phillips et al., "The Niche Construction Perspective: A Critical Appraisal," *Evolution 68*, no. 5 (2014).
[19] Odling-Smee, "Niche Inheritance," in *Evolution—the Extended Synthesis*, eds. Pigliucci and Muller, Cambridge, MA: MIT Press (2010), p. 176.
[20] Ibid., p. 177.

nature and culture, and the impossibility of ever separating these realities. Culture is shot through with nature, and nature is always already cultural. On the one hand, the Extended Evolutionary Synthesis reveals anew that organisms are shaped by forces and environments that they do not entirely control, and of which they are not always even aware. It expands our understanding of the complexity of the ways in which our biological and cultural pasts are always part of us—all the way down to the level of our genes and the various possibilities for their expression, as well as in the ecological niches that surround us. The persistence of the past into the present means that some begin life with "more to overcome," biologically and culturally. On the other hand, the EES also reveals that organisms are not only inert and passive entities acted upon by evolutionary forces. Rather, organisms also impact the environments and organisms around them, thereby shaping the direction and pace of evolutionary movement. In the words of one niche construction theorist, "organisms must be active as well as reactive."[21] Through our active living in the world, through our aesthetic tastes and romantic loves, our dreaming and our longing, through our religious practices and our daily habits, we constantly mediate and adapt the world we have received from those who have gone before, and we shape the biological and cultural world that will be passed on. The EES is changing how we think about what it means to be creatures embedded in an evolutionary milieu, and the dynamic picture it paints has relevance for how we think about the notion of original sin. We turn now to examine a central feature of Augustine of Hippo's approach to original sin before seeking salient points of connection between theological insights about original sin and the emphases of the EES.

Augustine, Unity, and the *Massa Peccati*

[21] Ibid., p. 178.

While it is not accurate to say that the doctrine of original sin originated with Augustine in the fourth century CE, his is the earliest and the most persistently influential systematic articulation of it, and as Tatha Wiley notes, his influence on the church and its thinking about sin has been "incalculable."[22] Augustine of Hippo's teaching on original sin is multi-faceted, and it evolves over the course of his lifetime. It was also partly shaped by various contextual elements of Augustine's life including his rejection of the dualistic ideas of Manicheanism, his battles with Pelagius, Caelestius, and Julian of Eclanum, as well as dynamics of his personal relationships that likely impacted his thinking. There is not the space in this essay to thoroughly place Augustine in his historical and personal context, but this has been addressed at length by others.[23] For the purposes of this essay, we focus on one key aspect of Augustine's approach to original sin—his dependence on the motif of unity.

Augustine is fixated throughout his writings on the theme of unity. This fixation is rooted in his Trinitarian commitments, which insist upon the equality and consubstantiality of the three persons of the Trinity, which he develops at length in *De Trinitate*. As he states in Book 1 of *De Trinitate*, "The Father, and the Son, and the Holy Spirit intimate a divine unity of one and the same substance in an indivisible equality."[24] In addition to their ontological unity, Augustine argues that there is a unity of will between the Father and the Son through the love of the Holy Spirit. As Luigi Gioia notes, the "unity of love in the Holy Spirit provides the content of the metaphysical notion of unity of essence or consubstantiality.[25] This notion of the

[22] Tatha Wiley, *Original Sin: Origins, Developments, Contemporary Meanings*, New York: Paulist Press (2002), p. 56.
[23] Excellent resources on this topic include Peter Brown's *Augustine of Hippo: A Biography* (New York: Dorset Press, 1967), the encyclopedia *Augustine Through the Ages: An Encyclopedia* (eds. Allan Fitzgerald and John C. Cavadini, Grand Rapids: William Eerdman's Publishing, 1999), *The Cambridge Companion to Augustine* (eds. Norman Kretzmann and Eleonore Stump, Cambridge: Cambridge University press, 2001), and many others.
[24] Augustine, *De Trinitate*, in *Saint Augustine: Opera Omnia CAG*, electronic edition, ed. Cornelius Mayer, Charlottesville, VA (2000), I.7. Pater et filius et spiritus sanctus unius substantiae inseparabili aequalitate diuinam insinuent unitatem.
[25] Luigi Gioia, *The Theological Epistemology of Augustine's De Trinitate*, Oxford: Oxford University Press (2008), p. 130.

nature of God as a unity of divine love shapes Augustine's understanding of the disease of sin as well as its remedy. Sin is that which divides and scatters, and salvation occurs when we are united to the unified Christ, the perfect unity of the divine and the human. As Gioia argues, in Augustine's thought, **"**Christ alone is 'the one' (*unum***)** who can heal the scattering effects of sinfulness . . . through love and faith we adhere to 'the one' Christ, the Mediator through whom we are reconciled with God, and are able to cling to the One, enjoy the One and remain forever one."[26] The unity of God, who exists in perfect *harmonia*, is the starting point, then, for Augustine's diagnosis of the disease of sin.

Augustine argues that all humans are united in Adam, and furthermore, that God intentionally arranged this unity "in order to show mankind how highly he prizes unity in a multitude."[27] He states, "what he [Adam] himself had become . . . he reproduced in his offspring"[28] because "man the parent is that same thing as man the offspring."[29] Here we see the importance for Augustine of the notion of the *massa peccati* that partially constitutes the material of human nature. The *massa peccati* is the "lump of sin," which as Pier Franco Beatrice argues, is a "kind of shapeless sin-infected substance, in which man is formed from birth and which comes to constitute a congenital and defining element of his physical and moral structure." Beatrice argues further that the *massa peccati* "holds a truly central place in the thought of Augustine," and further that the notion of the "lump" was prominent in Manichean thought, although it is significantly reworked by Augustine to fit more cogently with Christian beliefs. Additionally, Beatrice notes that "there are other documents, all from the East, that would lead us to believe there was a certain diffusion, especially oral, of the metaphor of the mass of dough or lump in both doctrinal and liturgical language, indeed from the earliest days

[26] Ibid., pp. 125-126.
[27] Augustine, *De Civitate Dei*, in *Saint Augustine: Opera Omnia CAG*, electronic edition, ed. Cornelius Mayer, Charlottesville, VA (2000), XII.23.
[28] Ibid., XIII.3.
[29] Ibid.

of the church."[30] As Beatrice argues, "on account of our birth through carnal generation, which links us unavoidably to the mortality that became our lot with the first sin, we all form a kind of sludge or mass of clay, which symbolizes our deep-seated sinful makeup (*massa luti quod est massa peccato*)."[31]

Augustine posits that humans were created fundamentally interconnected in order to emphasize God's desire for humanity's unity. All humans are bound together not simply by "similarity of nature,"[32] he says, but we are so deeply connected, we are also bound to each other by "the affection of kinship."[33] Augustine believes this truth about our origins implies an ethical imperative for all to seek unity, to heal division, and to have special reverence for the unity of the marriage bond. As he states, it is by "remembrance of that first parent of us all"[34] that all humans should "be admonished to preserve unity among their whole multitude,"[35] and should remember "how dear the union between a man and his wife should be."[36] Thus, Augustine's doctrine of original sin displays Augustine's dependence on the motif of unity to explain the human situation and to indicate how humans ought to act in light of our origins. His insistence upon the notion of a unified humanity via the motif of the *massa peccati* provides a useful point of connection with insights from the EES.

Original Sin and the Extended Evolutionary Synthesis

Insights from developments in the Extended Evolutionary Synthesis helpfully illuminate the nature of human life as negotiating a variety of in-between places as sites of historical dynamism. Every creature exists "in the middle," or as a unity of, nature and culture. Thus, the

[30] Pier Franco Beatrice, *The Transmission of Sin: Augustine and the Pre-Augustinian sources*, Oxford: Oxford University Press (2013), pp. 50-54.
[31] Beatrice, *Transmission of Sin*, p. 50.
[32] Augustine, *De Civitate Dei*, XII.22.
[33] Ibid.
[34] Ibid., XII.28.
[35] Ibid.
[36] Ibid.

EES highlights what Michele Saracino refers to as "our hybrid reality."[37] Additionally, the EES illuminates the nature of the body as both a memorial to the past and a site of development that is open to the future. It provides important tools for conceptualizing creaturely life as a blend of givenness and construction (both social and individual). It helps us to appreciate that causation is not linear; it is, rather, in the words of Samantha Frost, "complex, recursive, and multi-linear."[38] It demonstrates that every creature exists in the midst of a matrix of "interdependencies," and thus it works against the myths of both essentialism and determinism, but also the fantasies of autonomy and self-creation.[39]

We are constrained by our bodies, our ecological niches, our evolutionary pasts, but these very constraints are also the means of their partial overcoming. As Jane Bennett notes, humans are always "in composition with nonhumanity, never outside of a sticky web of connections."[40] Our bodies are products of an accumulation of events, forces, and processes in our evolutionary past that we do not control. We carry in our bodies the effects of choices made by our ancestors, the effects of traumas and triumphs they experienced, and the influences of the families and communities in which we were raised. On the other hand, the past we carry within us is not static, but it is constantly providing resources that we use in the present to develop new behaviors and trajectories, both for us as individuals, for our communities, and for our species. The EES helps us appreciate both the recalcitrance and the plasticity of what it means to be human. These insights into creaturely life are helpful for theologies of original sin.

[37] Michele Saracino, "Moving Beyond the 'One True Story,'" *Frontiers in Catholic Feminist Theology: Shoulder to Shoulde*r, eds. Susan Abraham and Elena Procario-Foley, Minneapolis: Fortress Press, (2009), p. 10.
[38] Samantha Frost, "The Implications of the New Materialisms for Feminist Epistemology," in *Feminist Epistemology and Philosophy of Science: Power in Knowledge,* ed. H.E. Grasswick, Dordrecht: Springer (2011), p. 71.
[39] Ibid., p. 78.
[40] Jane Bennett, "The Force of Things: Steps Toward an Ecology of Matter," *Political Theory 32*, no. 3 (2004), p. 365.

From the moment of conception, we are formed within a dynamic matrix of biological and social/cultural forces. There is no time at which the biological is not also cultural, and there is no "pure nature" that is later influenced by culture. Rather, from the moment we begin to exist, we receive biological and cultural inheritances that contribute to our flourishing, but that also "infect" us with biases, traumas, prejudices, distorted desires, and injustices that originated long before our choosing. To use Augustine's imagery, we are indeed born participating in something like a *massa peccati*—an inextricably interconnected material world that is infected with (but not totally corrupted by) sin. As Catherine Keller argues,

> I did not choose my ancestors' slaveholding, my nation's aggressions. Yet such preconditions have shaped, privileged and deformed "me"—like a contagious disease, as Augustine would say (yes we are all connected). If one earthling falls into alienation, into greed, into domination—that sin will infect its relations and this in part constitute all who follow. A relation is a repetition: recapitulation.[41]

In this sense, sin is "original" to each of us since there is never a time at which we are able to escape the formative power of the culture/nature dynamism of evolution. Additionally, in a qualified sense, we can argue that sin is propagated "biologically," if we again affirm with the EES that biology and culture work as a synergy to shape creaturely life.

This approach to original sin rejects the suggestion made by some that sin arises from "nature," or is simply a theological way of describing the destructive influence of some aspects of our biological inheritance. It likewise denies that sin is transmitted only through cultural inheritance and not biology. This essay presses deeper into the synergy of nature and culture and insists that we can never separate these realities, and so sin is transmitted through a matrix of influences both "cultural" and "biological," although the deeper point to acknowledge is the inadequacy of frameworks dependent upon a nature/culture dualism for explaining the origins of sin. Indeed, human culture and socialization are thoroughly biological developments, and human biology is permeated and shaped by human culture.

[41] Catherine Keller, *The Face of the Deep: A Theology of Becoming*, New York: Routledge (2003), p. 80.

Augustine's notion of the unity of the human race is thus affirmed and expanded by the insights of the Extended Evolutionary Synthesis. Indeed, in light of the EES, we can expand upon Augustine's insight to say further that we are united with not only our own species, but with all of the created world and all that came before us, all the way down to the level of the most fundamental processes that shape us. As Michele Saracino argues, "Interdependence carries over to the relations among creatures. Human beings are dependent on all the plants and animals of the earth, and the earth is vulnerable to the actions of all creatures."[42] One way then in which we can retain a notion of "original sin" in the twenty-first century in light of all that we know about the dynamic interplay of nature and culture in evolution is to see the human as a product of an evolutionary past that continues to exert causal influence, as an entity shaped by multiple interacting systems, with a certain degree of agency, but not unbounded possibility, with our agency always already limited and shaped by the matrix of interdependencies in which we live. The past decisions made by our ancestors, our experiences over the course of our lifetimes, and the biological forces that came before us—the sinful and the good and everything in between—are always with us, although we are also not completely determined by these histories.

The EES thus also provides us with important tools to reexamine our conceptions of agency and selfhood, which are interconnected with conceptions of sin and culpability. The EES renders untenable any conceptions of sin and culpability that are framed with reference to the human person as a free and autonomous "I." The various "sticky webs of connections"[43] that form each of us also entangle us in various ways in immense "webs of reciprocity in evil" that we cannot escape through our own efforts.[44] Yet, as we have seen, this matrix of causal influences that forms us also includes as one factor our own active decisions and choices, and

[42] Saracino, "Moving Beyond the 'One True Story,'" p. 13.
[43] Bennett, "The Force of Things: Steps Toward an Ecology of Matter," p. 365.
[44] Stephen Duffy, "Our Hearts of Darkness: Original Sin Revisited," *Theological Studies* 49, no. 4 (1988), p. 616.

so we can also make meaningful choices for good or for ill. As Keller states, "We go along, we do not resist, we seek to secure our existence. The repetitions become habitual, often compulsive, carried along by global patterns of assumption—economic, sexual, racial, religious. Amidst these structures, our agency may be unconscious. But it is never simply absent."[45] The EES helps us to develop a notion of sin that can account for the wide array of influences, forces, and systems that collide to influence human behavior, and to resist the temptation to think of culpability in a simplistically individualistic sense. As Elizabeth Grosz argues, it is perhaps more accurate to describe creaturely life in terms of excessive agency rather than a lack of agency. She states,

> Subjects, groups, do not lack agency; on the contrary, they may, perhaps, have too much agency, too many agents and forces within them, to be construed as self-identical, free, untrammeled, capable of knowing or controlling themselves. This is not to claim that subjects are not free, or not agents, but that their agency is mitigated and complicated by those larger conditions that subjects do not control.[46]

We are radically interconnected and interdependent, even across species, and all the way down to the molecular level. As Augustine's *massa peccati* suggests—the very "stuff" of which we are made is infected. In this light, a notion of 'inherited sin' remains a helpful resource as we seek to understand our histories of suffering and triumph. As Stephen Duffy has argued, "before being able to choose," we are, "merely by being historically situated," inextricably caught in conflictual and sinful structures that shape us.[47] In our unity with one another, we share our culpability and restoration, our sickness and healing.

The Extended Evolutionary Synthesis also highlights the importance of the embodied activities of everyday life for the ongoing evolution of identities and agencies. Niche construction theorists have illuminated the ways in which organisms actively shape their ecological niches. Daily activities and habits of organisms shape the selection pressures in

[45] Keller, *The Face of the Deep*, p. 80.
[46] Elizabeth Grosz, *Time Travels: Feminism, Nature, and Power,* Durham: Duke University Press (2005), p. 6.
[47] Duffy, "Our Hearts of Darkness," p. 616.

environments that subsequently select organisms. The small, mundane, bodily practices we participate in are pivotal in shaping the trajectory of evolutionary processes. To be a biological creature is to have to accept at times the material constraints of our embodied forms, to live within limits. However, we participate actively in the ongoing processes of the natural world through our repeated corporeal practices. God's creation of the world is a continual process of becoming, a continual proliferation of difference that is sustained by the presence of God but also influenced by the dynamic energy of human beings. Life is an "incessant teeming, an ongoing movement to be more, to be other, to be beyond what is,"[48] and so, "we must live in the world artistically."[49] Our collective, ecclesial, and individual bodily habits and practices play roles in the shaping the unpredictable future of our species.

The focus within the Extended Evolutionary Synthesis on corporeal practices helps illuminate the ways in which repeated daily practices can sediment destructive and sinful desires in individuals and societies. It also affirms the theological insight that liturgies and rituals are fundamental to human life, and that we can intentionally make efforts to use rituals to partner with the Holy Spirit to allow our desires to be shaped according to principles of love, selflessness, solidarity, and other Christian virtues. Liturgies and spiritual practices can provide structured spaces in which people can become more attuned to their desires, make their unconscious desires conscious, and also work to redirect destructive desires. It is not only theologies of the body that are needed, but also, in the words of John Paul II, "pedagogies of the body."[50]

Conclusion

[48] Grosz, *Time Travels*, p. 82.
[49] Ibid., p. 136.
[50] John Paul II, *Man and Woman He Created Them: A Theology of the Body*, Boston: Pauline Books and Media (2006), p. 274.

Since we are united all the way down to the most fundamental elements of life, we are born into the *massa peccati*, none of us can escape being infected and deformed in various ways by the contagion of sin. The #MeToo movement, which exploded in 2018 with its deluge of stories from victims of sexual harassment and violence, has, sadly, confirmed the central insight of this essay: namely, that we cannot understand ourselves without reference to our shared participation in a history of systemic sin that has shaped our bodies, our desires, and our relationships with one another. None of us can escape being infected by sin. The pervasiveness of the revelations of sexual violence shatters once again any illusions of upward evolutionary moral progress that some might have entertained, and it demonstrates the stubborn persistence of sin. If the intractability of sin is not taken seriously, an important opportunity provided by the #MeToo movement will be missed. As Mary Beard notes, "it may be more difficult than we imagine to convert a hashtag into practical action. In my gloomier moods, I fear that we may end up looking back to Me Too as the glorious herald of a change that never really happened, even if things never quite went back to what they were before."[51] While #MeToo has played a role in partially unveiling the extent of the sickness that infects human societies, uncovering the disease will not automatically enact healing. The Extended Evolutionary Synthesis helps us appreciate the fact that we are, to a large extent, shaped by histories and forces that we did not choose and which we cannot control through our own efforts. It reveals the reality that causation is plural and nonlinear. The dysfunctions and dis-creations that infect our communal lives were not definitively caused by one thing. Rather, histories of sedimented distortions of desire with many varying levels of agency and complex intersections of factors have coalesced to produce the situation of habitual and systemic violence and abuse we find ourselves in. A theological vocabulary enables us to name this violence as "sin." Every human is simultaneously a victim and a perpetrator, although not necessarily in equal amounts. As we

[51] Mary Beard, *Women & Power: A Manifesto*, London: Profile Books LTD (2018), p. 99.

have learned from epigenetics, even at the biological level, "some people have a lot more to overcome" than others.[52]

Augustine has helped us to see that, ultimately, we cannot transform ourselves by force of will or by cooperating with the processes of becoming inherent to evolution. Rather, it is only through the experience of redemption in Christ that the human person receives the gift of the Holy Spirit, which enables him or her to live life in a genuinely new way. Receiving the gift of the Holy Spirit enables the human person to receive herself anew "as a gift from God."[53] Transformation is, therefore, both a gift and a task. The Holy Spirit enables us to live in a genuinely new way, however, this is not a magical transformation. "Pedagogies of the body"—individual, familial, societal, and ecclesial—will also be necessary to reorient our desires toward love and away from domination or possession. This is not a "mastering" of desire, but rather, a redirecting and a renewal of desire.

Developments in the Extended Evolutionary Synthesis offer support for the notion that sin is, in a sense, "inherited" and inescapable. Augustine's anthropological insights about the unity of the human race is affirmed and expanded by developments in the Extended Evolutionary Synthesis. We are interconnected, interdependent, and constituted by various webs of connection that have forming power over us, which we did not choose. We belong to one another, and thus the notion of "original sin" provides a crucial framework for perceiving the reality that sin is not only manifested in discreet, individual, conscious acts, rather; its distortions permeate our ecological niches, our interrelations, and our sedimented desires. Sin originates in neither "nature" nor "culture" alone, since nature and culture are inseparable, entangled forces that shape creaturely becoming. As Serene Jones argues, sin "inhabits us just

[52] Rachel Yehuda, "How Trauma and Resilience Cross Generations."
[53] John Paul II, *Theology of the Body*, p. 248.

as we willingly inhabit it."[54] Our hope, then, does not lie primarily in the forward progress of evolution to heal us. Our salvation lies only through the way of the Cross, and by union with that "grace which flows backward from it."[55]

[54] Serene Jones, "Companionable Wisdoms: What Insights Might Feminist Theorists Gather from Feminist Theologians," *The Blackwell Companion to Postmodern Theology*, ed. Graham Ward, Malden: Blackwell Publishers (2005), p. 301.
[55] Aaron Riches, *Ecce Homo: On the Divine Unity of Christ*, Grand Rapids, Michigan: William B. Eerdmans Publishing Company (2016), p. 24.