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LOYOLA UNIVERSITY CHICAGO

RE-THINKING ANTHROPOCENTRISM THROUGH A  
GENETIC-EVENT PHILOSOPHY OF TIME

A DISSERTATION SUBMITTED TO  
THE FACULTY OF THE GRADUATE SCHOOL  
IN CANDIDACY FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

PROGRAM IN THEOLOGY

BY

CAROLYN J. LOVE

CHICAGO, ILLINOIS

DECEMBER 2014

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## ACKNOWLEDGEMENTS

No one achieves success without the help of others; it takes many people who inspire, encourage, support, nudge and cheer. This dissertation stands testament to all those people, and to God, who did that for me. Without them I would not be here today. I am blessed by you and am greatly indebted to you, including those I cannot mention here due to space! You have made this dissertation a reality. However, there are several people who I want to thank.

First and foremost, I want to express my gratitude, appreciation, and love for my husband, David, and my children, Sarah, Joshua, and Jacob. My family has sustained me through the ups and downs of 11 years of graduate school, involving juggling schedules, sacrificing activities, writing papers, studying for comprehensive exams, and constructing this dissertation. Your patience, love, and selflessness have made this dissertation possible. I especially want to thank David; words fail to describe all that you mean to me: spouse, partner, sounding board, and true friend.

I also must express my appreciation and undying gratitude to my parents, Charles and Reita Schmidt. The fact that I am on the verge of receiving a doctorate at 46 speaks volumes to the foundation that you laid for me. You always encouraged me to dream, to value education, and to never give up. You loved me regardless in success and in failure. I did not give up! I also want to thank my sister, Annette, who has supported me in all my endeavors from the moment she was born. Thank

you for the encouragement and prayers along the way, not to mention reminding me to have fun.

I want to extend a warm thank you to my “church family” at St. Patrick Parish in Yorkville, IL. Among others, I am especially grateful for the support of Tracey Jackson, Mary Jane Gloudeman, Kate Hoffmann, Gaylene Metrou, Loretta Hebert, and Father Michael Callea MIC. A special thank you to Susan Chacon who retyped all my notes after my laptop crashed. All of you have shown me the meaning of friendship and true community. I am blessed that God put you into my life. However, before I came to Yorkville, I was surrounded by wonderful people who helped me find my way, including Monsignor James Gunn, Lynn Braun, Laura Brown, and my RENEW ladies. Thank you.

I am also grateful for my director and mentor, Dr. John McCarthy who encouraged me from the moment I walked into his office in 2006 to embrace my scientific background. Without his nudging me through many conversations and believing in my ability as a scientist and a theologian, this project would not have been conceived. Dr. McCarthy greeted my dissertation from the beginning with interest, support, guidance, and optimism, even when I struggled with Chapter Five. Thank you. I also want to thank Dr. Jon Nilson who has supported me in pursuing the intersection of theology and science throughout my classwork and now in my dissertation. He has helped me to articulate my ideas effectively both in writing and in speaking. Similarly, Dr. Bryan Pickett, a geneticist, endorsed my project and went above and beyond in strengthening my argument. Thank you for your interdisciplinary interest, dedication to my pursuit of knowledge and helpful feedback.

Thank you to my friends in the Theology Department. I appreciate your conversation, advise, laughs, critique, and inspiration. Among many I want to thank, Kevin Considine, Erica Saccucci, Teresa Calpino, Andrea Burger, Seth Alexander, Bill Myatt, Hongmei Zhao, and Andrea Hollingsworth. I am honored to extend a huge thank you to Catherine Wolf who truly enabled me to reach this point in the Ph.D. process. Please know this dissertation attests to your work, reminders, help, and friendship.

Thank you all for your support and may God continue to bless you.

For my loving husband David  
and my children Sarah, Josh, and Jacob

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## ABSTRACT

In the classical Christian theological understanding, God and time are tightly interwoven (e.g., time and eternity, the Incarnation, and liturgy) and inform how we comprehend the presence and absence of the Incomprehensible in our day-to-day lives. Yet the classical Christian understanding does not take into account scientific discoveries pertaining to time and how this influences our experience of time. It is within the fabric of God and time that this dissertation will argue that the concept of time contained within contemporary genetics provides a significant and innovative way of considering the Classical Christian theological notion of the presence and absence of God, thus providing an original approach to how we think about God today in a culture that seeks answers from science as well as theology.

This project employs a theological fundamental hermeneutical method outlined by David Tracy that brings together Christian fact and common human knowledge in critical correlation in three broad steps. The first step articulates the notion of time found in classical Christianity by surveying how Augustine understands God as outside of time, while created humanity thinks in terms of past, present, and future, and how this influences Augustine's doctrine of God (God's hiddenness). The second step explores the common human knowledge of time as seen in contemporary genetics, developing a philosophy of time in genetics. This concept of time will then be "translated" through the phenomenology of Claude

Romano in order to build a heuristic that will bridge the lexicon of science and the lexicon of theology. The third step brings the new heuristic developed in the second step into dialogue with the classical Christian understanding of God and time established in step one in order to discover the similarities and differences between the two and will culminate in the formation of a genetic-event model of temporality that will allow for new thinking about the presence and absence of God.

## INTRODUCTION

Throughout Christian history the believer has pondered the conundrum of God's presence and absence in one's life: how "I" experience knowledge of God in my day-to-day activities or within my life world. Saint Augustine of Hippo proposes that temporal humans experience the eternal God in the instantaneous moment of the temporal present. Yet, this theological insight of grappling with God's perceived presence or absence in human experience collapses time into the present, dismissing the existence of the past and the possibility of the future. A nonexistent past is problematic in today's world of dinosaurs, DNA, and evolution. Yet, Augustine's philosophy of time remains foundational in contemporary theology, and it calls us to ask if Augustine's language, insight, and paradigms still successfully function for theology today. What does a contemporary Christian re-thinking of the presence and absence of God look like? What aspects need to be considered in the 21<sup>st</sup> century? What role, if any, does history play in understanding God? Is a re-thinking warranted or does classical Christianity hold the most adequate paradigm of comprehending God's presence and absence? Taking these questions in sequence will provide the necessary context for establishing my thesis.

Is a re-thinking warranted? Christian theology today struggles with the reflective turn-to-the-self Augustine engenders when he contemplates God's presence and absence by reflecting on human consciousness. This line of thought

fosters modernity's inclination to see the present through self-presence and the person as an autonomous self-grounded self, outside of history. According to theologian David Tracy, Christian theology needs to break away from this form of onto-theo-logy,<sup>1</sup> a type of theology of being or metaphysic.<sup>2</sup> Tracy calls contemporary theologians to search beyond onto-theo-logy, stating that "we . . . must struggle with articulating the presence/absence of the Hidden God of history on behalf of the living *and* the dead."<sup>3</sup> For Tracy, a re-thinking needs to break from the modern attempt to use our own consciousness as the foundation for all reality, to resist an a-historical perception of the world around us, and to discover a history of the present that allows past and present voices to speak.<sup>4</sup>

Tracy points to two aspects as problematic in naming or comprehending God: the present reflecting self-presence, and the person as an autonomous self-grounded self in the current situation. These two aspects coalesce to form an ontology of the present similar to earlier theologians, including Augustine, who in the *Confessions* develops an understanding of God's presence and absence framed in

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<sup>1</sup>See Joeri Schrijvers, "Chapter 1: Some Notes on a French Debate," *Ontotheological Turnings? The Decentering of the Modern Subject in Recent French Phenomenology* (Albany: State University of New York Press, 2011), 5-24. "In general, the ontotheological endeavor seeks an ultimate reason that can account for the totality of being" (5). Schrijvers describes the modern problem with ontotheology as the subject-object distinction where human beings become portrayed as autonomous subjects and lose her/his uniqueness as object.

<sup>2</sup>David Tracy, "The Post-Modern Re-Naming of God as Incomprehensible and Hidden," *Cross Currents* 50, no. 1-2 (2000): 240.

<sup>3</sup>Tracy, "The Post-Modern Re-Naming of God," 246.

<sup>4</sup>Tracy, "The Post-Modern Re-Naming of God." 241.

temporality directed by an ontology of presence: where God exists in eternal presence and humans exist in temporality, creating an antinomy between eternity and temporality that cannot be rectified in this life.<sup>5</sup> The experience of the present moment in time then becomes an image for understanding God as eternal. For Augustine, this entails a reflection on the internal experience of time. To counter the inward turn that Augustine typifies, Tracy turns to the hiddenness of God, along with the incomprehensibility of God. Yet, Tracy asserts that contemporary theologians should still grapple with God's presence and absence, suggesting that within this setting more needs to be said.

Tracy advocates a re-thinking of God as hidden/revealed and incomprehensible/comprehensible that retrieves the Christian traditional figures of prophet and mystic. In Tracy's model, the prophet retrieves the apocalyptic interruption of history as the focus of God's self-disclosure in struggle where the marginalized find an alliance with Jesus on the cross, while the mystic reclaims the apophatic inability to name God that deconstructs history, reminding us of our otherness from God.<sup>6</sup> For Tracy, the re-thinking of God's presence and absence requires a merger between the prophetic and the mystic that reflects "the unfathomable Mystery of God as the Incomprehensible and Hidden One."<sup>7</sup> Tracy

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<sup>5</sup>See Charles Taylor, *Sources of the Self* (Cambridge: Harvard University Press, 1989), 121, 127-139 for an in-depth discussion on how Augustine introduced "the inwardness of radical reflexivity . . . to the Western tradition of thought." 131.

<sup>6</sup>Tracy, "The Post-Modern Re-Naming of God," 242.

<sup>7</sup>Tracy, "The Post-Modern Re-Naming of God," 247.

sees this Hidden-Revealed/Comprehensible-Incomprehensible model to be central for re-thinking modern forms of naming God.<sup>8</sup>

What role, if any, does history play in understanding God? Tracy proposes a re-thinking of “our concrete history” as an element of re-naming God within the structure of presence and absence. How we understand ourselves as historical, placed within historic time, becomes an important aspect because this placement grounds humanity not in an autonomous, non-historical, self-conscious self, but in a concrete reality, their life world. Humans grounded in temporality cannot escape time or history and a re-thinking of presence and absence needs to take this into account.

What aspects need to be considered in the 21<sup>st</sup> century? In essence, this question raises the issue of whether metaphysics is the most privileged conversation partner with theology, as seen in onto-theo-ology. Or are there other ways of thinking that could also be relevant in moving the theological dialogue forward today? Two important developments that arise out of the Enlightenment and Modernity include science and philosophical reflection. Both of these merit consideration in re-thinking the human understanding of presence and absence of God.

The first important development, science, places the general scientific study of the human person in the discipline of biology, which studies all living creatures. Within biology, genetics studies the process of trait inheritance from parent to

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<sup>8</sup>Tracy, “The Post-Modern Re-Naming of God.” 240.

offspring, including gene function, distribution, and variation. The human genome forms the foundation or map of the human that the body processes utilize in the day-to-day interworking and being of the person.<sup>9</sup> In exploring the viability of making use of genetics in theology, Lindon Eaves and Lora Gross state “that theologians should not be timid about exploring the anthropological issues raised by human genetics because the mechanisms of genetics offer a model system for examining the connection between the scientific and theological claims about reality.”<sup>10</sup> Eaves and Gross see the scientific study of genetics as bringing together current knowledge and biological knowledge of the issues of being human. This opens up the question of how might genetics play a role in re-thinking the presence and absence of God.

Let us go back to Augustine as an example of classical Christian thought to address the question of genetics' possible role in re-thinking presence and absence. Augustine cannot explain time nor can he explain God, but in both cases he is aware of their existence. Augustine, in examining the presence and absence of God, focuses on the person and how he/she experience time as future, present, and past within human consciousness. For Augustine, logical and metaphysical reflection on human temporality provides the method for wrestling with the issue of knowledge of God

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<sup>9</sup>Our genome tells us we are human, 46, XX or 46, XY, because of its evolutionary history. It also plays a major role in the functioning of the human body. However, to say it determines who we are as a person does not take into account the complex nature of being human. It takes more than just our DNA to be human. This project in looking at the scientific investigations into the human genome understands that we are more than our DNA. Yet, in discussing the human person, insight into biology, namely genetics, can prove to be important in theological thinking.

<sup>10</sup>Lindon Eaves and Lora Gross, “Exploring the Concept of Spirit as a Model for the God-World Relationship in the Age of Genetics,” *Zygon* 27 (1992): 282.



within the genre of the confession.<sup>11</sup> Temporality becomes a way of creating a metaphor for the presence and absence of God. This is to be expected; Augustine's context for reflection was shaped by the critical tools of his time: logic, rhetoric, grammar, and philosophy. Augustine's reflection upon temporality opens up the possibility of using genetics as the model that provides an analogy to God's presence and absence because of its anthropomorphic focus. As humans, we are temporal and temporality focuses on common human experience that encompasses Augustine's tools but also scientific tools, including genetics.

Genetics also brings to light a biological aspect to temporality, which expands Augustine's method of self-reflection through human consciousness to a more physical/experimental method. This shift from mind only to mind and body more adequately takes into account the complexity of the human person that exists as a totality within temporality. Today new information is available that Augustine could not access, which changes the way in which we view what it means to be human in time. This change in thinking also changes the kind of information available, and the kinds of information that must be considered in contemporary theology.

Along with the predominant role of science in the 21<sup>st</sup> century, the Enlightenment's "turn to the subject" has opened up new avenues for philosophical reflection on the human temporal experience of their life world or their being in-

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<sup>11</sup>Augustine in the *Confessions* uses the two fold technique of the confession: first, a reflection to ascertain and admit guilt to God; and second, a contemplation on Christian thought and what humans know or do not know about God in our limited understanding. This will be discussed further in Chapter One.

the-world. Phenomenology endeavors to uncover how human beings understand and interpret their being-in-the-world. A principal feature of this thinking is the conceptual reflection on the category of “event”. It is through the category of event that upon reflection, people come to understand their life world. Philosopher Claude Romano maintains that “the world in which we are born and which forms the horizon of all our human behavior is a world of both things and events.”<sup>12</sup> Romano asserts that humans comprehend their lives through events and proposes an event phenomenology that addresses how human beings grasp their day-to-day life world. Re-thinking how we apprehend the presence and absence of God within the context of our lives necessitates attending to how we construe the events that comprise our existence. Therefore, event phenomenology can provide insight into the question of humanity’s perception of God’s presence and absence.

What does a contemporary Christian re-thinking of the presence and absence of God look like? To address this question is the task of this dissertation. The thesis that I am defending will demonstrate that the concept of time contained within contemporary genetics along with event phenomenology provide a significant and innovative way of considering the theological notion of presence and absence of God, thus providing an original approach to how we think about God today in our life world.

To do this, I will recapitulate Augustine’s model of examining temporality as a method of mirroring human comprehension of God’s presence and absence, and

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<sup>12</sup>Claude Romano, *Event and World* (New York: Fordham University Press, 2009), 1.

then construct a new contemporary model that uses genetics and event phenomenology. Thus, this project takes up the task of re-thinking the presence and absence of God without cultivating the ontology of presence seen in Augustine. In order to avoid a complete inward turn toward mind/consciousness in grappling with how humanity experiences God, it will seek a more comprehensive model that does not rely on the present reflecting self-presence, and the person as autonomously self-grounded.

In pursuit of greater adequacy, this model will consider the biologically substantiated human person within the context of their day-to-day experience; it will also attend to how temporally centered humanity comprehends God as present or absent within their historical life world. By using genetics to explore temporality and event phenomenology to investigate day-to-day experience, this project will construct a new model of temporality, different from Augustine's model, which aids in re-thinking the presence and absence of God. This re-thinking will provide a more robust and complete temporal model that encompasses both mind and body because the human person is more complex than the classical ideal Augustine proposes.

Chapter One explores Augustine's use of temporality to reflect the presence and absence of God through the genre of the confession. Augustine analyzes the human experience of time in book XI of the *Confessions* and formulates a unique

understanding of time as contained in the mind, opposed to the cosmos.<sup>13</sup> Today, theologians, philosophers, and scientists cite Augustine as an authority on time, especially within the Christian tradition. Therefore, Augustine makes the most logical choice for this project. Chapter One will explore how this classical notion of time continues to be interwoven into our notions of the presence and absence of God by examining Augustine's anthropology and its relationship to Augustine's doctrine of God. The objective of this chapter is to lay out the problem of Augustine's formulation of temporality within an overarching presence ontology.

Chapter Two introduces and generates a philosophy of time by considering how biological creatures "contain" and "keep" time through their DNA using the categories of past, present, and future, allowing for the duration of species. This chapter delves into current findings in genetics, DNA's task within the cell, and the overall function of organisms to demonstrate genetic time as consisting of past, present, and future. It pays close attention to DNA recombination, mutation, and interrelations to show how time functions in biology, which is instrumental in Chapter Four. The purpose of this chapter is to examine the current biological data regarding time and translate this data into a philosophy of time that establishes how genetic time contributes to presence and absence.

Chapter Three constructs a mediating vocabulary between the genetic philosophy of time and the phenomenology found in Claude Romano's book, *Event and World*, by summarizing Romano's phenomenology. The vocabulary functions as

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<sup>13</sup>Paul Ricoeur, *Time and Narrative* (Chicago: University of Chicago Press, 1983), 14-15.

a heuristic device whose definitions and ideas can provide meaning for science and theology. This allows new meaning to the human experience of God in our day-to-day life and open up a life world application of presence and absence.

Chapter Four brings together Romano's phenomenology and the genetic philosophy to construct a new holistic method or model of temporality. This temporal vision or model facilitates a creative and robust examination of how, as temporal creatures, humans comprehend the presence and yet absence of God in our day-to-day lives.

Chapter Five brings the developed genetic-phenomenological analysis of time to bear on re-thinking its transformative role in understanding the experience of God as both presence and absence. This is done in three steps: first, by demonstrating the corrective correlation of the genetic-phenomenological approach to Augustine's position, which represents a metaphysics of presence displayed in contrast to the temporal and the eternal; second, by establishing how my account of temporality functions in the theological application seen in Johannes Baptist Metz; and third, by proposing that the method developed in this dissertation also has application in the science religion dialogue.

CHAPTER ONE  
AUGUSTINE'S CLASSICAL USE OF TIME IN "THINKING"  
ABOUT THE PRESENCE AND ABSENCE OF GOD

This chapter summarizes the classical Christian theological characteristics seen in Augustine's conception of temporality and how this conception structures his understanding of the presence and absence of God that still persist in the Christian imagination. Chapter One will utilize Augustine because Augustine profoundly analyzes the human experience of time in book XI of the *Confessions* and formulates a classical Christian understanding of time as contained in the mind, opposed to the cosmos.<sup>1</sup> Today, theologians, philosophers, and scientists cite Augustine as an authority on time, especially within the Christian tradition. Therefore, Augustine is the logical choice for examining how Christianity classically "thinks" about temporality and eternity. By examining Augustin's rumination on how humanity experiences time as past, present, and future, versus how God experiences only present, Chapter One sets forth the classical antinomy between temporality and eternity as the first step in the dissertation's project of developing a new model for "thinking" about God that takes into consideration human biology.

To explore how Augustine utilizes temporality in developing a way of thinking about God, this chapter will first, explore Augustine's use of past, present,

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<sup>1</sup>Paul Ricoeur, *Time and Narrative* (Chicago: University of Chicago Press, 1983), 14-15.

and future; second, explore his understanding of God as always present; third, explore the contradiction this sets up; and fourth, explore the issues this struggle creates for human comprehension of the presence and absence of God.

### **Temporality in Augustine**

In book XI of the *Confessions*, Augustine begins by asking God to illuminate “the remaining areas of darkness in my understanding” not for his own sake but for the sake of the people he guides spiritually.<sup>2</sup> He requests in prayer to understand Genesis 1, the creation of heaven and earth “in your Word, in your Son, in your wisdom, in your truth,”<sup>3</sup> in order to correct the errors of those who ask, “What was God doing before he made heaven and earth?”<sup>4</sup> Augustine realizes that, as temporal beings, humans mistakenly project temporality onto God, because they do not understand how God creates. Humanity confuses temporal successiveness with constant eternity, which leads Augustine to examine how humanity perceives time.

Augustine begins his examination of temporality by asking, “What is time?”<sup>5</sup> in order to point out the difficulty in thinking about temporality. For Augustine, time represents a conundrum where, on one hand, he knows what time is, but, on the other hand, he cannot explain it to another.<sup>6</sup> It is within this framework of

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<sup>2</sup>Augustine, *Confessions* (New York: Oxford University Press, 1998), 221, XI. ii (2).

<sup>3</sup>Augustine, *Confessions*, 227, XI. ix (11).

<sup>4</sup>Augustine, *Confessions*, 228, XI. x (12).

<sup>5</sup>Augustine, *Confessions*, 230, XI. xiv (17).

<sup>6</sup>Augustine, *Confessions*, 230-231, XI. xiv (17).

knowing yet not knowing that Augustine ponders the being and nonbeing of time through the categories of past, present, and future. It is by unfolding Augustine's comprehension of past, present, and future as existing yet not existing that we start to uncover this classical understanding of temporality and its correlation to thinking about God.

### **Past**

For Augustine "time past" represents a conflict between what exists as "now" and what cannot possibly currently exist because it is not "now". The past cannot "be" in the present moment because it has happened and therefore, ceases to exist. "But when it [time] has past and is not present, it cannot be."<sup>7</sup> Past time does not continue to occur in our "now", but has lost existence. Yet, common language affirms that somehow past does exist. Augustine in grappling with this challenge suggests that common language needs an adjustment to reflect that time once present is now past.<sup>8</sup> In this nuance of language, Augustine recognizes that past is truly the present of the past and that time itself passes into non-existence. Thus, past time does not exist physically because it is not currently in the present.

Even though past time's existence is not physical, Augustine concedes that past events exist, and he questions where these events are in existence. In his struggle to find an answer, he concludes that past events must truly exist in the present. However, past events cannot "be" in the present like created objects exist

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<sup>7</sup>Augustine, *Confessions*, 233, XI. xvi (21).

<sup>8</sup>Augustine, *Confessions*, 231, XI. xv (19).



in the present, but exist in human memory as an image recalled in the present time.<sup>9</sup> For Augustine, the memory is contained in the immaterial soul or the mind, “now”, which is where we remember the past while standing in the present.<sup>10</sup> Past, although it has occurred as event, does not continue to exist except in the mind.

### **Future**

Augustine’s reflections on the future are similar to those on the past; future also does not exist and is also contained in the mind. However, the future, unlike the past, fails to exist because it has not yet happened and therefore cannot “be” in the present except in the mind as the present contemplating the future as expectation.<sup>11</sup> Our mind predicts the future from the present events that are already present as expectation.<sup>12</sup> We expect the sun to rise tomorrow because it rose today, and therefore, can predict the future rising of the sun. The concept of the sunrise already exists in my present mind from experience, and I take this experience and apply it to the possible future.<sup>13</sup> Thus, the future itself has no being, only expectation, and therefore, cannot exist. The future is the mind in the present contemplating expectation.

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<sup>9</sup>Augustine, *Confessions*, 233-234, XI. xviii (23).

<sup>10</sup>Augustine, *Confessions*, 235, XI. xx (26).

<sup>11</sup>Augustine, *Confessions*, 231, XI. xiv (17).

<sup>12</sup>Augustine, *Confessions*, 235, XI. xviii (24).

<sup>13</sup>Augustine does pause here to ponder how God can inform souls of the future, in cases such as the prophets. He asks God by what method God, who has no future but only present, informs the prophets of their future and suggests that God allows the prophets to read the future in light of the present, rationalizing that “What does not exist, certainly cannot be the subject of information” (235, XI. xix (25)). Augustine then admits it is beyond his comprehension and moves on to discuss the soul.

Here again, while talking about the future, Augustine notes that common language does not properly express the non-existence of the future. When someone speaks as if there are three times, past, present, and future, they are misspeaking because this reinforces the notion that three times exist in objective reality, which Augustine judiciously demonstrates cannot be the case. Instead, Augustine sees that only the present exists, in three modes: present past in memory, present “now” in awareness, and present future in expectation.

### **Present**

Present “now” or the immediate present holds unique issues for Augustine, including its transient quality, its lack of extension, and its measurability. For Augustine, present exists but cannot always be present or in existence continually. It must become past, because if it did not, then the immediate present would be eternity. This poses a difficulty in understanding present time’s existence, “how can we say that this present also is?”<sup>14</sup> Augustine concedes that one of the qualities of present’s existence is that it will cease to be. Present time tends towards non-existence.<sup>15</sup> The present time as one of God’s creations is constantly changing from existence into non-existence. Present time is transient, it holds no constancy, and it quickly ceases to exist.

Because the present quickly ceases to exist, Augustine understands the present as having no duration or no division into past and future. The existent

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<sup>14</sup>Augustine, *Confessions*, 231, XI. xiii (17).

<sup>15</sup>Augustine, *Confessions*, 231, XI. xiii (17).

present cannot be extended into the non-existent future or the non-existent past. It can only exist in the smallest instantaneous moment, which occupies no space<sup>16</sup> and therefore, cannot be long or short.<sup>17</sup> Like past and future, the mind contemplates the present in immediate awareness.<sup>18</sup> The present has no duration or extension, yet it exists.

A present with no extension, along with the non-existent past and the non-existent future produces difficulties in measuring and reporting time. For Augustine, in common language, periods of time are measured and understood as long or short, but how, the mechanics of what is actually measured, eludes him. “So my God, I measure, and do not know what I am measuring.”<sup>19</sup> It is clearly not future or past that is measured since neither of these exist in reality and present has no extension in which to measure, which leaves Augustine discerning that time is a distension of the mind and thus the soul.<sup>20</sup>

For Augustine, understanding time as a distention of the mind allows him to finally isolate what is measured when talking about time. It is not periods of time passing that are measured but present consciousness, our mind’s comprehension of our immediate “now”. According to Augustine, time itself must be present

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<sup>16</sup>This maybe an interesting point for further research, regarding Einstein’s theory of general and special relativity in which space and time are shown to be linked. Where there is time there is space.

<sup>17</sup>Augustine, *Confessions*, 232, XI. xv (20).

<sup>18</sup>Augustine, *Confessions*, 235, XI. xx (26).

<sup>19</sup>Augustine, *Confessions*, 239, XI. xxvi (33).

<sup>20</sup>Augustine, *Confessions*, 240, XI. xxvi (33) and 242 XI. xxvii (36).

consciousness<sup>21</sup> and measuring time is the function of the mind's continuous attention.<sup>22</sup> "It is through this [continuous attention] that what will be present progresses toward being absent."<sup>23</sup> Therefore, a long future is a long expectation of the future and a long past is a long memory of the past, and not periods of time. It is by the stretching or distension of the mind in two ways from expectation into memory that the attention, in the present, measures time; measuring time is not the movement from future to past, but the movement or the distension of the soul.

Augustine illustrates time as a distention of the mind by describing a recitation of a psalm from memory, where the memory of the psalm is recalled from the past and becomes stretched from that memory between future and past.

Augustine remembers the words of the psalm, which become future expectation, because he anticipates the words he is about to say. Yet, the remembering and expecting occur in the present consciousness of the mind, where attention focuses on the recollection, and then the transfer from future expectation to past memory. As the process continues, the memory of the recitation grows and the expectation shrinks until the whole psalm passes into memory. For Augustine, the recitation of the psalm occurs in pieces, and he equates this to the whole of all human lives.<sup>24</sup> Human life like the psalm is experienced as a stretching or restlessness that occurs

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<sup>21</sup>Augustine, *Confessions*, 242 XI. xxvii (36).

<sup>22</sup> Augustine, *Confessions*, 243, XI. xxviii (37).

<sup>23</sup>Augustine, *Confessions*, 243, XI. xxviii (37).

<sup>24</sup>Augustine, *Confessions*, 247, XI. xxviii (38).

in pieces in the immediate present to be recalled through memory in the same manner as the psalm. Thus, not only is time a distension of the mind and soul, but so is life. Life is experienced as a pulling apart in temporal successiveness, which causes restlessness that only God in eternity can rectify. God in the eternal present provides the unity or restfulness that humanity seeks but cannot obtain in temporal distension. Humanity can only experience unity when in death they rest in eternity or in God's eternal presence.

### **Eternity and God**

Augustine understands that God cannot be subjected to temporal successiveness since God is eternal, however, according to Genesis 1, God creates by word,<sup>25</sup> which typically indicates something uttered in time, such as a voice that resonates when giving a command. Augustine identifies two problems with creation by voice; first, time cannot exist before God creates time, and second, a voice takes time to resonate, causing time to pre-exist creation, so creation by word must not be like human speaking.

For Augustine, God is not subjected to temporality because God created time and "existed before all times."<sup>26</sup> God's present is eternity with no future nor past. Time does not pass away from the presence of God, coming from a non-existent future and going into a non-existent past, but God's "now" exists always. God is always in the present, but also always present or always in existence without

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<sup>25</sup>"Then God **said**, 'Let there be light'; and there was light." Genesis 1:3 NRSV (bold added to indicate creation by word).

<sup>26</sup>Augustine, *Confessions*, 230, XI. xiii (16).

change. No temporality is coeternal with God, because if time were co-eternal, then God would not be permanent or always in existence, which would result in no immortal creating and sustaining Being and thus, no creation.<sup>27</sup> Therefore, God exists outside of changing temporality in the eternal present and experiences neither past nor future but eternal duration. God sees the wholeness of time simultaneously, or in other words, God sees the wholeness of the past, present, and future all at once eternally.<sup>28</sup> Therefore, eternity is not a succession of moments but the whole of eternity simultaneously present, an eternal “now”.

According to Augustine, the pre-existence of time before creation would render eternity illogical since eternity would be mutable and thus contingent, rendering no Being (God) immutable and thus necessary. Without a necessary Being, nothing would exist. “If in the substance of God anything has come into being which was not present before, that substance cannot truthfully be called eternal.”<sup>29</sup> Therefore, God’s creating Word must not be similar to the sound of a human voice, which takes time to resonate but must be “spoken eternally . . . said in the simultaneity of eternity.”<sup>30</sup> God’s words contain no elements of time or space, which liberate God’s voice from temporality and thus preserve eternity and immortality. Augustine surmises that God creates by Word through God’s everlasting will, which

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<sup>27</sup>Augustine, *Confessions*, 230, XI. xiv (17).

<sup>28</sup>Augustine, *Confessions*, 230 XI. xiii (16).

<sup>29</sup>Augustine, *Confessions*, 228, XI. x (12).

<sup>30</sup>Augustine, *Confessions*, 226, XI. vii (9).

is not created but belongs to God's substance.<sup>31</sup> Therefore, those who ask, "What was God doing before creation?" are in error because time did not exist before God created time by Word.

Thus, Augustine understands that God in eternity enjoys a unity that humanity desires but only God possesses. God is not subjected to the changes of the past, present, and future that distend or tear apart the human soul, because God exists in the eternal "now", a united existence outside of temporality. For God, "[i]n the eternal, nothing is transient, but the whole is present."<sup>32</sup> God experiences eternity, not as parts, but as a united whole. Thus, unchangeable divine eternity represents the unity not found in temporality, because God is other than created temporality.

### **Antinomy**

Augustine sets up an antinomy between human existence in temporality and God's existence in eternity. The antinomy Augustine establishes, almost but not quite, separates the creature from their creator. God, who is not creature, exists outside of temporality, while the human creature, who is not God, but the image of God, exists restlessly in created time. In analyzing the conflict between eternity and time, a way of thinking about God takes shape through consideration of three main features Augustine focuses on: first, the root cause of the discordance – sin, second,

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<sup>31</sup>Augustine, *Confessions*, 228, XI. x (12).

<sup>32</sup>Augustine, *Confessions*, 228, XI. xi (13).

the effect of the discordance – language and knowledge, and third, the bridge between time and eternity – memory.

## **Sin**

For Augustine, both the original sin of Adam, extended to all humanity, and the continual day-to-day sin of each individual is foundational to understanding the human experience of the antinomy between temporality, the experience of the state that humans fell into due to sin, and eternity, the state that offers sanctuary to the fallen human soul. Augustine sees Adam's sin as consigning all of humanity to death and misery, "in that man who first sinned, in whom we all died and from whom we were all born into a condition of misery."<sup>33</sup> Post Fall, all humanity is born into the condition of desolation and deprivation from the Creator. Adam and Eve are cast out of the Garden of Eden, and become blind to the presence of God. They no longer enjoy their original closeness to God, but have to endure separation from their Creator. Augustine parallels this separation to the human experience of temporality, which causes distension and restlessness, which can only be assuaged upon death when the soul returns to God who lifts up the down cast, temporal humanity, to the summit of eternity, from which God never falls.<sup>34</sup>

Adam's sin causes the condition of human misery along with death. A being that ceases to exist, that changes its mode of being, cannot be eternal and therefore,

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<sup>33</sup>Augustine, *Confessions*, 197, X. xx (20).

<sup>34</sup>See Augustine, *Confessions*, 244, XI. xxix (39), where Augustine explains that he exists in scattered times whose order he does not comprehend, tearing him to pieces until he merges with God. Later Augustine notes that God lifts the down cast to the summit of eternity where God never falls from, 245, XI. xxxi (41).



it must experience its being-in-the-world differently than the eternal Creator who experiences eternal presence. Thus, human existence is experienced as a fleeting present that causes distension in the mind between future and past. This mode of being is in opposition to the eternal mode of being, which the human desires and seeks out, but can only obtain in death when reunited with the Creator. In seeking the eternal, humanity comprehends the vast ontological difference between the eternal Creator and the finite creature.<sup>35</sup> The finite creature, who is not eternal, must experience the circumstance of time and the distention of the soul while longing for his/her reunification with God upon death. The antinomy between temporality and eternity reminds humanity of the vast crevasse between creature and Creator and that humanity's earthly life leaves the human in anguish, experiencing life as distended between future and past, hoping for release, which is only available after death in God.

Therefore, Adam's sin shapes humanity's experience of created time that emphasizes distension, a tearing of the soul, which highlights the ontological difference between humanity and God. Paula Fredriksen proposes that after the Fall, for Augustine, "God continued transcendent and out of time, humanity's entire

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<sup>35</sup>Paul Ricoeur notes that the human fall into the dark mire as seen in Plotinus (*Enneads*, I, 8:13, 16-17) undergoes a change in the Christian milieu to represent the radical ontological difference that separates the creature from the Creator, which the soul learns by moving back to its origin and by trying to know its origin. Paul Ricoeur, *Time and Narrative*, Volume I (Chicago: The University of Chicago Press, 1983), 27.

existence became temporally conditioned.”<sup>36</sup> She notes that, along with temporality, the knowledge of God, which was immediate and unmitigated, also changed and became distended in time.<sup>37</sup> Human sinfulness results in the human experience of the antinomy between temporality and eternity, resulting in humanity waiting not for future days but for the hope of the last things. “The storms of incoherent events tear to pieces my thoughts, the inmost entrails of my soul, until that day when, purified and molten by the fire of your love, I flow together to merge into you.”<sup>38</sup> The distension that the soul experiences in temporality will only cease when united with God in undivided eternity.

Not only does the Fall shape the antinomy between temporality and eternity but so does personal sin. “Lord my God, how deep is your profound mystery, and how far away from it have I been thrust by the consequences of my sins.”<sup>39</sup> Augustine confesses that his sinfulness and the sinfulness of humanity extend the breach between temporality and eternity, between human knowledge and God’s knowledge, and between humanity and God.<sup>40</sup> Personal sin prevents humanity from knowing God and Augustine uses the person who asks, “What was God doing before

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<sup>36</sup>Paula Fredriksen, “Augustine on God and Memory,” *Obliged by Memory: Literature, Religion, Ethics* (Syracuse: Syracuse University Press, 2006), 136.

<sup>37</sup>Fredriksen, “Augustine on God and Memory,” 136.

<sup>38</sup>Augustine, *Confessions*, 244, XI. xxix (39).

<sup>39</sup>Augustine, *Confessions*, 245, XI. xxxi (41).

<sup>40</sup>Augustine, *Confessions*, 245, XI. xxxi (41).

he made heaven and earth?” to exemplify the effect of personal sin.<sup>41</sup> He calls the questioners “people who suffer from a disease which brings its own punishment and want to drink more than they have the capacity to hold.”<sup>42</sup> These people desire knowledge beyond their aptitude, and according to Augustine, they need to “be ‘extended’ towards ‘those things which are before’.”<sup>43</sup> In other words, the knowledge they seek will only come to fruition in the beatific vision.<sup>44</sup> Augustine suggests that these people make a confession to God, to confess their pride in having the audacity to assume equivalent knowledge to God.<sup>45</sup> Sinful, temporally bound humanity can never fully understand the eternal God, and on earth will always be torn by the distension time causes in present knowledge.

### **Language and Knowledge**

The distension and restlessness of the soul, caused by the antinomy between temporality and eternity, conditions human language and knowledge. Augustine points out that temporally conditioned human language is insufficient in speaking about how humans experience their being-in-the-world and their limited knowledge

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<sup>41</sup>Augustine, *Confessions*, 244, XI. xxx (40).

<sup>42</sup>Augustine, *Confessions*, 244, XI. xxx (40).

<sup>43</sup>Augustine, *Confessions*, 244, XI. xxx (40).

<sup>44</sup>See Augustine, *Confessions*, 244, XI. xxix (39) for Augustin’s interpretation of Philippians 3: 12-14. He re-quotes part of verse 13 in xxx (40) to reveal how foolish those who ask about before time are in thinking they could possibly possess the same knowledge as God. Augustine uses this quote to point to the afterlife when humanity no longer experience the stretching of the soul in distractions of time but a unity in God found only in eternity.

<sup>45</sup>Augustine, *Confessions*, 245, XI. xxxi (41).

of God. “In some degree I see it, but how to express it I do not know . . .”<sup>46</sup> Both language and knowledge fall short, according to Augustine, because the distended or restless soul cannot stand still in the eternal present but imperfectly stills for moments in the fleeting present. In these moments of stillness, the human can know truth<sup>47</sup> and “the splendour (sic) of a constant eternity.”<sup>48</sup> This knowledge enlightens the person on the impossibility of comparing temporal successiveness and constant eternity. Human language and knowledge will never be sufficient to explain temporality or eternity, yet Augustine finds value in the seeking as a means to draw closer to God. In learning more about the human condition, ultimately, one learns more about God.

Augustine ponders the possibility of knowledge for a human mind untouched by sin and endowed with the ability to know past and future. He illustrates this sinless knowing by comparing it to a familiar psalm. “From such a mind nothing of the past would be hidden, nor anything of what remaining ages have in store, just as I have full knowledge of that psalm I sing.”<sup>49</sup> Even though such a mind would be a marvel, being always aware of the past, present, and future simultaneously, Augustine recognizes, it still could not know in the mysterious way in which God knows. For a person listening to a familiar rendition of a psalm with a sinless mind

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<sup>46</sup>Augustine, *Confessions*, 226, XI. viii (10).

<sup>47</sup>Augustine, *Confessions*, 226, XI. viii (10).

<sup>48</sup>Augustine, *Confessions*, 228, XI. xi (13).

<sup>49</sup>Augustine, *Confessions*, 245, XI. xxxi (41).

still suffers distension or stretching in expectation of the future and the memory of the past sounds because this mind still exists in temporality. Yet, with God it is otherwise because God “is the truly eternal Creator of minds.”<sup>50</sup> A sinless mind would grasp past, present, and future more completely than fallen humanity, but its knowledge would never be equal to God’s knowledge. However, there exists no sinless mind, for Augustine, and thus, human knowledge suffers greater darkness and separation from its Creator due to sin.

### **Memory**

According to Augustine, it is through memory that temporal fallen humanity can realize any knowledge of God. Fredricksen in her examination of Book X of the *Confessions* notes that it is through memory that the time bound, imperfect, mortal individual can know and recognize the Truth. “Memory is our bridge to the world outside ourselves, to ourselves, and to God.”<sup>51</sup> Fredricksen continues that for Augustine memory houses prior knowledge implanted by Christ that draws the soul to seek God, the ultimate object of its love. Memory provides “the readiest analogy” by which God knows the human and the human seeks God especially in the eschaton.<sup>52</sup>

In Book 12, Augustine sees apprehension in the mind by the memory as a means to know the eternal, which will ultimately allow an understanding of God in

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<sup>50</sup>Augustine, *Confessions*, 245, XI. xxxi (41).

<sup>51</sup>Fredriksen, “Augustine on God and Memory,” 132.

<sup>52</sup>Fredriksen, “Augustine on God and Memory,” 135. Augustine, *Confessions*, 187, 193, X. ix (16), xvi (24).

the beatific vision not clouded by temporality. Temporally conditioned humanity will only truly know God outside of temporality, in eternity; while temporally bound humanity can only imperfectly know God through memory contained in the mind or soul.<sup>53</sup>

The antinomy between eternity and temporality is a dimension of the ontological differences between God and humanity. God who is wholly present in eternity can only be glimpsed by humanity in the razor thin immediate temporal presence. Due to sin, human experience of time, knowledge of God, and use of language fall short, reminding humanity of her/his imperfection in comparison to God. It is in memory contained in the mind that the human recognizes Truth and thus, God. The memory, for Augustine, comprehends temporality but cannot adequately explain temporality. Instead, the memory experiences temporality as a distension of the mind, a tearing apart of the soul. This distension causes the human to seek rest but in seeking it discovers that it will never find rest except in God, who never experiences any tension between past and future.

### **Temporality and the Presence and Absence of God**

The conundrum of time becomes a mirror to how humanity understands God. Augustine cannot explain time nor can he explain God, yet in both cases he experiences knowledge of their existence. Time or the distension within the mind takes on greater significance in understanding how humanity perceives the presence and absence of God. Temporally conditioned sinful humanity can only

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<sup>53</sup>Augustine, *Confessions*, 244, XI. xxix (39).

experience the presence of the eternal God upon reflection in the distended mind, which experiences time as past, present, and future. It is by the threefold understanding of the mind as anticipation, comprehension, and recollection that time as a distension or stretching frames human understanding of God.

Augustine's conception of God and God's experience of reality is not temporal but human understanding of God is temporally conditioned because humans exist in time created by God. This establishes the contextual entry point for understanding presence and absence of God, and constructs an ontological structure for thinking of presence and absence. Created humanity can never fully know God who exists in eternity. In this construct, humanity gains knowledge of God through self-reflection, but self-reflection occurs in time. The antinomy between eternity and temporality becomes problematic in seeking knowledge of God. Augustine turns to a second construct to circumvent the ontological divide between God and humanity; he turns to the present "now" that exists in distension between future and past. The temporal present becomes the way to gain knowledge about God. By recalling and reflecting on memories in present "now", Augustine finds a means to seek knowledge of God, which structures his thinking regarding the presence and absence of God. Augustine uses two temporally grounded approaches to understanding the presence and absence of God: one ontological and the other the temporal present.

For Augustine, the mind, especially how the mind understands time as a distension between the non-existent future and the non-existent past, allows

humanity only glimpses of the presence of God who is always in the present or always present. Therefore, humans experience God's presence as fleeting like the immediate present, and often experience God as absent. Like the recitation of a psalm, all time is in the present, while absence is a modification of the present. When I sing the psalm, it is present to me, but once I am finished singing, the psalm is absent, unless, I recall it in my memory. Augustine places great emphasis on the importance of the memory, which, in recalling the past, assigns meaning to all human events, from reciting a psalm to knowledge of God, and yet, the past itself does not exist except in memory. Augustine provides a model of thinking about God, where God is not reduced to temporal present, but where God's presence or absence reflects the temporal present within an ontological paradigm.

Central to Augustine's discerning the presence and absence of God in light of temporal metaphors is the confession. The genre of the confession focuses on ascribing meaning by reflecting on memory in the present "now" as a means to a future union with God. In the confessions, Augustine contemplates what it means to be a person, in light of God. This is achieved by self-presentation which leads to self-realization. Within the narrative of the confession, the self becomes part of the allegory of salvation, and the struggle of body and soul to attain future happiness in God. Augustine uses the confession as the way to discover and comprehend human temporality, which in turn provides the tools necessary to fathom how humans encounter God's presence and absence. As a means of comprehending temporality, the confession acts as the "clock" by which time becomes inscribed into human



understanding. It provides a method to gain knowledge of God, both in time's presence, where humanity ever so briefly glimpses Truth, and in time's absence or eternity, where God exists in eternity that is wholly present which is accessible to humans only after death.

The confession as "clock" fixes time as something that God creates, as seen in Genesis 1. God as creator of time is a temporal, outside of time, while the rest of creation, including humans, cannot escape temporality. Thus, creation establishes time as the condition of all human understanding. For Augustine, all human knowledge occurs only in the present because only the present exists. Yet, God exists outside of temporality, outside of human comprehension, making true or complete knowledge of God impossible. Thus, God becomes the incomprehensible and the confession becomes the conduit to seek what can never be fully revealed. The confession which occurs in the mind between the person and God takes place in the present recalling the past while anticipating the future. Thus, eternity becomes the present in all its different facets, and the present is the point where humans encounter God through the confession.

Correspondingly, the confession as "clock" becomes the method by which God's presence and absence is discerned through reflection. This method invokes memory which surfaces in day-to-day life and calls for reflection upon those memories in order to ascertain and ascribe their meaning. Through conscious recollection and probing of memory, Augustine cultivates a hermeneutics of the self, mediated by meditation on creation by Word. Augustine's hermeneutic realizes

presence as both personal, my immediate “now” moving me toward Truth and as incomprehensible; my immediate “now” in moving prevents me from comprehending Truth. Knowledge of God through the confession increases in reflection upon memory and yet so does the unknowability of God. God becomes present in my immediate “now”, but in my meditation upon my immediate “now”, God’s absence becomes incomprehensibility, affecting a yearning to be outside of time with God. For Augustine, the confession provides the method to develop a temporal model that illuminates God’s presence in our present and also God’s absence in our present.

### **Shape of Presence and Absence**

The shape of presence and absence that Augustine creates within the genre of the confession of the “absence of past and future” in relation to the presence of the present, takes on three important modes where there is a presence of God in the human soul, but it is experienced as absence. First mode, the temporal is absent that is different from eternal. This mode highlights the antinomy between time and eternity. Humanity exists in the temporal present, while God exists in eternity, creating a feeling of God’s absence. Temporality that will never be eternity creates absence. For Augustine, even though God is always present in the human soul, the ontological dichotomy between temporality and eternity prevents humanity from experiencing God as always present.

Second mode, non-existence is absent that is different from existence. The non-existence of the past as well as the future generates absence. Only the razor

thin present “now” exists, and only in the present “now” can God’s presence be glimpsed. The distension that the past and future produces gets taken up by Augustine as absence. The restless human soul is torn between future and past and does not stay in the existent present long enough to grasp God’s eternal presence. Thus, the soul experiences this non-existence of past and future as God’s absence.

The third mode, consciousness is absent that is different from self-unity or oneness. Again the distended soul/mind/consciousness finds itself outside the eternal whole where God exists in unity. God is not subjected to the changes of the past, present, and future that distend or tear apart the human soul, because God exists in the eternal “now”, a united existence outside of temporality. Therefore, the human consciousness in this life will never fully experience God as fully present. Instead, the divided consciousness experiences God as absence.

Presence and absence seen in Augustine does not mean a complete disconnect between the two, an either or situation, but a relationship born out of creation. For Augustine, we may experience absence as total darkness due to sin or our inability to know God; yet, a longing also exists to seek God by recalling memory, which also comes out of creation. In this understanding, absence is not a lack of relationship, but a lack of experience of total presence of God.

Within the format of the confession, Augustine finds a method that allows him to seek knowledge of the eternal God through human temporality and not despite it. Yet, this model relies on human cognition. It, thus, privileges the mind in determining how humanity perceives the presence and absence of God.

Augustine's model asserts that only the temporal present exists and that there is no physical token of past-ness. Augustine ponders time solely as a recollection, the mind seeking God's presence through self-knowledge, which highlights Augustine's genius for his time. Reflecting upon time, using the method of the confession, which is a form of memory seeking Truth, leads Augustine to place the existence of time inside the self in the present, while disregarding the possibility of time existing outside of the human mind or soul.<sup>54</sup> For Augustine, the human soul distinguishes the human animal from other animals, thus humanization becomes the soul's task throughout human existence. Yet today, we have other significant approaches to the human that were unavailable to Augustine that bear consideration when re-thinking God's presence and absence.

Like Augustine, the following chapters will seek a model of temporality as a means of gaining knowledge of God, yet, unlike Augustine, they will utilize contemporary science, specifically genetics, as a way to re-think how Christians understand the presence and absence of God. These chapters aim at fundamentally building a model of temporality that unites genetics, philosophy, and theology from our biological experience of time that will provide a way of thinking about God that includes not only the mind but also the body. By incorporating mind and body, a fuller anthropological knowledge can be obtained, which will facilitate a robust understanding of how we as humans understand the presence and absence of God.

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<sup>54</sup>There are concerns with Augustine's placing temporality in the mind, like those seen in the work of Bertrand Russell and Christopher Kirwin. See, Bertrand Russell, "Saint Augustine's Philosophy and Theology," *History of Western Philosophy* (New York: Simon and Schuster, 1945), 354 or Christopher Kirwin, "More Meditations on Time," *Augustine* (London: Routledge, 1989), 183-186.

CHAPTER TWO  
GENETICS AND TEMPORALITY: ESTABLISHING A  
GENETIC PHILOSOPHY OF TIME

In Augustine's theology, as seen in Chapter One, temporality is explained through the categories of past, present, and future. Augustine determines that time only exists in the present as attention, while the past is the memory, and the future is expectation.<sup>1</sup> Neither past time nor future time exists except in the mind, which expects, attends, and remembers. For Augustine, present time lacks extension, yet attention is continuous. It is through the mind's continuous attention that the present progresses towards being absent.<sup>2</sup> It is within the categories of past, present, and future that this chapter will explore how a non-Augustinian time occurs within an organism by examining biology and thus, developing what I will call a genetic philosophy of time. This will provide an alternative to Augustine's understanding of temporality, and thus, will open up a new biological thinking for presence and absence that escapes the antinomy between eternity and temporality.

Currently, a more general genetic philosophy of time does not exist in academia outside of evolutionary study using mutation rates and population allele frequencies as measures of evolutionary time. Therefore, the project of this chapter will be to develop a concept of temporality by using evolutionary biology and

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<sup>1</sup>Augustine, *Confessions* (New York: Oxford University Press, 1998), 235, XI, xx (26).

<sup>2</sup>Augustine, *Confessions*, 243, XI, xxviii (37).

genetics to construct the scientific element that Augustine lacks.<sup>3</sup> The genetic conception of time will look to the organisms, most notably the human being, and how they utilize and internalize time.<sup>4</sup>

The direction of time for biological creatures on Earth moves from the past, into the present, and constrains the future. In other words, time moves from the emergence of life until extinction, including all the creatures in between. By examining genetics, DNA (deoxyribonucleic acid), and the overall function of organisms, this chapter will reveal that genetic time consists of past, present, and future that are not exclusively contained in the mind.

This seemingly reductionist approach from a theological understanding or deterministic approach from a biological understanding does not in any way discount the holistic importance or complexity of humans or other creatures. It ultimately maintains that even the simplest biological organism is a complex network that works as a totality within itself and within its environment, which

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<sup>3</sup>Note: I will not engage physics in determining a genetic concept of time due to the absence of a directional arrow for time in physics. Living organisms experience time as having a one way directional arrow, flowing from the past into the future; and in physics, time becomes a measure that is equally valid as a positive or negative value, or, in other words, it can progress into the “future” (positive value) or regress into the “past” (negative value). Therefore, time perceived as moving or flowing in only one direction does not exist in physics and time then becomes a construct of the mind, more specifically the human mind, as a way to comprehend the world around us. See William R. Stoeger, S.J., “God and Time: The Action and Life of the Triune God in the World” *Theology Today* 55, no. 3 (October 1, 1998): 365-388, *ATLA Religion Database with ATLASerials*, EBSCOhost, accessed May 23, 2014 or John C. Polkinghorne “Space, Time, and Causality,” *Zygon* 4 no. 4 (December 2006): 975-983, *ATLA Religion Database with ATLASerials*, EBSCOhost, accessed May 23, 2014 for more information regarding physical time intersection with theology.

<sup>4</sup>I will be using the current and past genetic findings on time in order to construct a genetic philosophy of time. Some of the authors I will engage include but not limited to: Brian C. Goodwin, Steven Jones, Lily E. Kay, Steve Olson, John D Palmer, Steven Rose, A. Sumova, Z. Bendova, M. Sladek, R El-Hennamy, K. Mateju, L. Polidarova, S. Sosniyenko, H. Illnerova, and Michael Young.

requires more than just its DNA. Therefore, a genetic philosophy of time could easily be called a biological philosophy of time or an evolutionary philosophy of time, but since the current research in biology that directly affects the notion of time occurs in the area of genetics, this dissertation will refer to its understanding of time as a genetic understanding.<sup>5</sup>

This chapter will examine how the human person genetically utilizes and internalizes time through the categories of past, present, and future. It will do this by, first, examining how DNA works; second, looking at how DNA links us to our past; third, considering how DNA functions in our present as timekeeper; fourth, analyzing how DNA contributes to our future; fifth, compiling a cohesive genetic philosophy of time; and finally comparing genetic temporality to presence and absence.

### **DNA Overview**

DNA strands contained in almost all cells<sup>6</sup> form the genes that inform, direct, and order the cells and thus, the organism. Genes are the guidelines that help define differences between plant and animal, a tree and a bird, an oak from a robin, and determine an organism's taxonomical classification, including modern humans, *Homo sapiens sapiens*. Through an elaborate two-step process of transcription and

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<sup>5</sup>From this point on the term "genetic" will be used to describe this holistic approach that includes the organism's biochemistry, cellular apparatus, intra and inter-cellular interactions, and the environment in which the organism lives.

<sup>6</sup>The human genome consists of 46 chromosomes that are supercoiled strands of DNA, which reside in all body cells' nucleus except in mature red blood. Mature red blood cells do not contain a nucleus because it is lost in maturation and along with the nucleus the DNA of the cell is lost also.

translation, these genes provide the information needed to create the broad outline of the human person. To say we are only a product of our genes oversimplifies the complexity of all creatures and the complexity of DNA.<sup>7</sup>

Fully delving into the complexity of living organisms and their DNA is beyond the scope of this chapter. However, two important aspects of genetics germane to establishing a philosophy of time need to be considered: transmission and alteration of DNA.

### **Transmission**

Transmission refers to how genetic material is passed on from one generation to the next, from parent to offspring. In humans this occurs via meiosis, which results in the formation of maternal or paternal haploid gametes that join in sexual reproduction to form the diploid offspring. In other words, meiosis results in the formation of sperm (spermatozoa) or egg (ovum) cells that contain half the genetic material of the parent. When the sperm cell unites with the egg cell, it results in a complete set of genetic material with half coming from the mother and the other half from the father. Transmission of the genetic material or the coming together of the gametes is the beginning of the offspring's life potential.

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<sup>7</sup>See for more information; Mario F. Fraga, Esteban Ballestar, Maria F. Paz, Santiago Roper, Fernando Setien, Maria L. Ballestar, Damia Heine-Suñer, Juan C. Cigudosa, Miguel Urioste, Javier Benitez, Manuel Boix-Chornet, Abel Sanchez-Aguilera, Charlotte Ling, Emma Carlsson, Pernille Poulsen, Allan Vaag, Zarko Stephan, Tim D. Spector, Yue-Zhong Wu, Christoph Plass, and Manel Esteller, "Epigenetic differences arise during the lifetime of monozygotic twins," *PNAS* 102 no. 30 (2005) accessed May 20, 2014, <http://www.pnas.org/content/102/30/10604.long>.



## Recombination/Mutation

Recombination and mutation are ways in which the DNA within an organism can change and can be passed on to the next generation. Recombination is the physical exchange of genetic material during meiosis, which results in a different combination of genes in the offspring than in the parent, while mutation is any detectible and heritable change in the genetic material that is not caused by recombination.<sup>8</sup>

Recombination in humans occurs during the formation of the gametes, either the sperm or egg, where segments of paired homologous chromosomes exchange parts, creating a different combination of genes on the chromosome than seen on the original parent chromosome. These swaps arise because of the close proximity of the paired chromosomes during meiosis, and they aid in providing a genetic map of where genes are located along a chromosome. Recombination exchanges become part of the offspring's genotype and can be passed on to future generations.

Similarly, mutations that occur during meiosis (germinal mutation) or following conception solely in the germ cell lineage (somatic gonadal mutation) are inherited by the offspring and can be passed on to subsequent generations.<sup>9</sup> Mutations that take place after conception in non-gonadal cells cannot be passed on to future generations, and thus, only affect the person in which they emerge.

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<sup>8</sup>Peter Russell, *Genetics* (Glenview: Scott, Foresman and Company, 1990), 144, 523.

<sup>9</sup>Note: mutations in the true soma outside of the germ cells cannot be inherited by the next generation. Either the sperm or egg's DNA must be mutated or the mutant must arise in the cells we use to make sperm or eggs in order for a mutation to be passed on to future generations.

Mutations can occur spontaneously or be induced by environmental factors, such as radiation, chemical mutagens, or carcinogens. These changes to the DNA are often repaired but not always, leaving the offspring open to the possibilities these changes may bring.<sup>10</sup>

Both recombination and mutation cause genetic diversity in the offspring that is unique to that individual and these changes can also change the genome that is passed down to future generations. These changes occur unannounced and often go unnoticed by the person who carries them.<sup>11</sup> Recombinational reassortment of the alleles (alternative forms of a gene) that results in new combinations of alleles but not new alleles is of great importance in populations and in individuals. Because recombination affects every meiosis and every chromosome in each meiosis it is by far the most common driver of genomic variability. Concurrently, mutation also plays a role in genetic variation, which drives evolution in a two steps process: first, genetic variation arises and, second, different alleles increase or decrease as a result of purifying selection, random genetic drift, or neutral processes. First, on the scale of many generations, new mutation causes some new genetic variation. Second,

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<sup>10</sup>Types of mutations include: substitution- an exchange of one base for another, which either causes no change or encodes for a different amino acid (e.g., Sickle cell anemia); insertion- extra base pairs are inserted into the DNA strand; deletion- a section of DNA is lost; frameshift- the gene experiences a shift in how the bases are read; and repeat expansion- the nucleotide repeats several times in a row. See Peter Russell, *Genetics*, 520-522.

<sup>11</sup>It is believed that every chromosome pair undergoes one to four recombination events on average in the formation of every sperm or egg. Thus, no gamete escapes global meiotic recombination and the products of that recombination. Terry Hassold, Stephanie Sherman, and Patricia Hunt, "Counting cross-overs: characterizing meiotic recombination in mammals," *Oxford Journals Life Sciences & Medicine Human Molecular Genetics* 9 no. 16 (July 2000) accessed May 22, 2014, <http://hmg.oxfordjournals.org/content/9/16/2409.full>.

although its effect is small in any one generation, mutations that provide some advantage to the individual will spread through the population over many generations of evolutionary selection, while those that are detrimental will slowly be eliminated, unless environmental changes occur that favor the detrimental mutation.<sup>12</sup> Mutation provides the fundamental genetic changes necessary for evolution to occur and for a new species to come in to being, whereas recombination is the phenomena that generate most phenotypically relevant genetic distinctiveness in any population, outside of macro-mutations and aneuploidies that are inevitably associated with grave genetic disease. Thus, mutation can produce unique alleles or alternative forms of the same gene, while recombination and relative allele frequency in the population are the driving forces of organism to organism genetic variation.

### **Genetic Philosophy of Time: Past**

Genes not only characterize and distinguish our species but also contain information that links us to our past, shapes our present, and allows for possibility in our future. Every strand of DNA not only differentiates species, such as, fish or fern, but also reveals the deep past of the history of speciation that reaches back to the beginning of life on Earth. According to geneticist Steve Jones, "Every modern gene descends from times long ago."<sup>13</sup> Genes allow us to look beyond our own existence and learn about what occurred in the past before the life of our own

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<sup>12</sup>Peter Russell, *Genetics*, 800-804.

<sup>13</sup>Steve Jones, *The Language of Genes* (New York: Doubleday, 1993), 106.

species. Jones sees modern creatures as living fossils whose DNA offers a window into the past. “To a geneticist, everyone is a living fossil, containing the heritage of his or her predecessors. Genes re-create history, not just since humans appeared on earth, but since the origin of life itself.”<sup>14</sup> A geneticist can “read” the past in an organism’s genes permitting a glimpse into the evolutionary past of that organism by comparing the genomes of diverse extant species to see patterns of change from the gene level to the level of the whole genome. The DNA is a record or a historical molecular clock that allows the geneticist to peer into the past and determine when a species diverged from its evolutionary ancestors. In other words, we carry our evolutionary history within ourselves even though we have no conscious memory of our deep past.

This record or historical molecular clock<sup>15</sup> resides as DNA, which has been transferred from one generation to the next either with or without change, and can be found in muscle cells, skin cells, brain cells, etc. With the right tools, we can look backwards in time at the development of our species through comparison across genomes in extant and even extinct organisms.<sup>16</sup> The historical molecular clock

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<sup>14</sup>Jones, *The Language of the Genes*, 107.

<sup>15</sup>Here the historical molecular clock refers to the DNA as a whole, which is comprised of the base pairs of adenine, thymine, cytosine, and guanine. In humans this occurs in the nucleus as 46 chromosomes containing approximately 2,000,000 genes. Therefore, the molecular clock in a human encompasses that individual’s 46 chromosomes. It is through the examination of the organism entire genome that determines its evolutionary past.

<sup>16</sup>I believe with the continuing advancement in genetics that soon genes will become an accurate molecular clock. To understand the current difficulties in using DNA as a clock, see Jones, *The Language of Genes*, 110. To see the advances in molecular clock technology, see Dos Reis, Mario; Inoue, Jun; Hasegawa, Masami; Asher, Robert J; Donoghue, Philip C J; Yang, Ziheng, “Phylogenomic

tracks the gene insertions, deletions, substitutions, inversions, duplications, and translocations that occur through time and that ultimately correlate with and may explain the separation of one species from another. “Nothing in biology makes sense except in the light of history, by which I mean simultaneously the history of life on Earth . . . and the history of the individual organism . . . from conception to death.”<sup>17</sup> This information is not only a record of the past but a vital key to an organism’s present.<sup>18</sup>

In a genetic philosophy of time, the past is a part of the present. A relation exists between past and present where the past shapes the present. No modern organism exists without the changes that occurred to its DNA through mutation. An example of the impact of significant change in DNA can be seen in the research of Katherine Pollard. She studied the function and evolutionary history of the human gene sequence HAR1 that contributes to brain formation to assess how and why primates, namely chimpanzees, and humans diverged from a common ancestor. Pollard found that a burst of base substitutions that occurred six million years ago in our common ancestor’s DNA that did not occur in what would become the chimpanzee accounts for the difference seen today in the human brain compared to

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datasets provide both precision and accuracy in estimating the timescale of placental mammal phylogeny,” *Proceedings. Biological Sciences /The Royal Society*, 2012-Sep-7, 3491-500.

<sup>17</sup>Steven Rose, *Lifelines: Biology Beyond Determinism* (New York: Oxford University Press, 1998), 15.

<sup>18</sup>Rose, *Lifelines*, 15-16.

the chimp's brain.<sup>19</sup> If that alteration in DNA of our ancestor's brain did not occur, then we would not be beings capable of advanced symbolic reasoning and language, who search for meaning and purpose for life, which we are today. Our DNA with its unique record of our ancestors' past, along with our own personal genetic combination and re-combinations, form our biological foundation and our biological "now". The present is not independent from the near past or the deep past but contingent upon them. In order for our "now" to exist, for us as a unique human being or any living creature on earth, a "then/now" has to exist in our DNA as a link between our ancestors "then" and our present "now". If our ancestors' DNA had not been transmitted through time via reproduction to our present, then we would not exist. Past cannot be discarded or dismissed in biology. Temporal past, actual lived time has to be real in a genetic understanding of time because creatures populate the Earth that contains a DNA memory of the past which makes possible the present. The past is truly inseparable from the present.

This is not like a history where past discoveries develop into current technology but instead comprises a record of a distinct "then/now" because past is necessary and a part of the present. The genome of the past would be distinct from the current genome in tangible and detectable ways, lacking the evidence of future events, yet to occur. New technology instead replaces the old technology; we traded an abacus for a slide rule and a slide rule for a calculator that does not contain either

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<sup>19</sup>Katherine S. Pollard, "WHAT MAKES US HUMAN?" *Scientific American* 300 no. 5 (May 2009): 44-49.

an abacus or a slide rule, only their shared historical association with mathematics is evident. This is an informational association that can embody many diverse materials. Unlike technology, our DNA, our genes, are a physical record, a non-intellectual memory of the past which becomes a part of the present, and is incorporated in our current function and reproduction. The present could thus not exist without the past. This is different from our intellectual memory or the memory as seen in Augustine. Intellectual memory can be lost with diminishing biological brain function, as evidenced in Alzheimer's disease, dementia, or brain trauma, but life continues. If our cells lose the ability to "read" our DNA or to "remember" our historical molecular past, then we and our future descendants would cease to exist. Therefore, our historical molecular clock plays a vital role in shaping our present, opening us to the possibility of the future, while linking us to our past.

In a genetic understanding of time, the record of the past lives literally in our DNA as seen in the sets of genetic mutations that resulted in us, both the changes that occurred in our ancestors and the changes that occur in ourselves, acting as a record of the cell divisions that built our somatic selves.<sup>20</sup> However, our past reflected in our DNA, although unique to us, is shared with all the creatures that came before us and with all the creatures that will come after us. Our present selves and our future descendants exist or have potential existence because of our species'

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<sup>20</sup>See Dan Frumkin, Adam Wasserstrom, Shai Kaplan, Uriel Feige, and Ehud Shapiro, "Genomic Variability within an Organism Exposes Its Cell Lineage Tree," *PLOS Computational Biology* 1 no. 5 (September 2005), e50, accessed May 22, 2014, <http://www.ploscompbiol.org/article/info:doi/10.1371/journal.pcbi.0010050>.

past. We are open to our present in part because of our DNA and the changes it has under gone.

### **Genetic Philosophy of Time: Present**

Our conscious awareness of the present describes how humans experience “now”. This consciousness is somehow a function of how our brain perceives our temporality by fixing our present experience to a mechanical clock that keeps time in 60 second increments adding up to a 24 hour day.<sup>21</sup> This comprehension of the present represents the traditional approach to temporality, one that favors the human mind, which developed the mechanical clock, and often dismisses the “now” of other life forms. A genetic understanding of time is not limited to human experience but opens the experience of the present to all living organisms, because all living organisms contain historical clocks, their DNA and biological clocks in the form of cyclical changes in patterns of the activation of genes. These biological clocks run on a 24 hour cycle through environmental entrainment in the absence of cognitive perception of time and are, de facto, unaware of mechanical clocks. These biological clocks operate inside different somatic cells along with brain cells, but ultimately the organism’s environment directly influences the expression of gene’s which comprise the circadian or daily biological clock. A genetic understanding of the present is not based so much on how our minds perceive the present or measure

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<sup>21</sup>K.G. Denbigh provides an excellent discussion on the objectivity of time in “The Objectivity, or Otherwise, of the Present,” *The Study of Time III* (New York: Springer-Verlaag, 1978), 307-329. Denbigh concludes that time is not some sort of existence but a relational characteristic of events “including those events in the brain and in conscious awareness which provides the sense of a ‘present’ (322).



it by a mechanical clock but on how our bodies, including our brains, as a totality keep time. Otherwise, genetic time orders how we function day-to-day in our environments, which allows us to experience events and influences how we experience them.

These DNA clocks are different from our historical molecular clock (as seen above) that contains our “then/now”, even though they are both influenced by the information encoded by an organism’s DNA. The historical molecular clock consists of the entire genome of an organism. Therefore, my historical molecular clock involves my entire DNA found in the 46 chromosomes that comprise my unique genome, yet are descended from my parents. Inside these 46 chromosomes lie specific genes that function as biological molecular clocks that count off 24-hour intervals in most life forms (circadian clock) and act as a “stopwatch” (interval timer).

### **Circadian Clock**

The master biological clock in mammals that orders the day-night cycle or circadian rhythm resides in the suprachiasmatic nucleus (SCN), a group of nerve cells in the hypothalamus at the base of the brain. Cells elsewhere in the body also show clock activity separate from the SCN.<sup>22</sup> The SCN or circadian clock consists of several genes and neuronal networks that work together to form a feedback loop that controls a multitude of biological activities, including the function of the pineal

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<sup>22</sup>Michael W. Young, “The Tick-Tock of the Biological Clock,” *Scientific American* (March, 2000): 66.

gland, which rhythmically produces melatonin, a hormone that induces sleep and regulates the sleep-wake cycle. This biological clock in most cases functions on a 24 hour cycle that is not dependent on the sun after a cycle begins. The sun, however, plays a role in re-setting the SCN biological clock when light hits the retina and causes the pineal gland to taper the production of melatonin.<sup>23</sup> Yet the SCN is not the only biological clock that tracks time; cells in the body keep their own “local time” that allows each cell the ability to regulate itself and perform its daily functions.<sup>24</sup> The SCN and these individual cellular molecular clocks are not limited to mammals but similar clock cells are also seen in drosophila or fruit flies. Similarly, biological clocks also exist in single cell organisms, plants, and invertebrates that do not contain a SCN.<sup>25</sup>

Chronobiologist, John Palmer, expands the function of biochemically active DNA to include a role in governing “a major portion of the temporal lives of most all living things.”<sup>26</sup> Our DNA regulated via interaction with many proteins acts through the SCN and individual cellular clocks to affect the daily rhythms of many physiological processes such as the time of day we are most alert, have the best

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<sup>23</sup>Young, “The Tick-Tock of the Biological Clock,” 66.

<sup>24</sup>John D. Palmer, *The Living Clock: the Orchestrator of Biological Rhythms* (New York: Oxford University Press, 2002), 140. Also see Nicolas Cermakian and Paolo Sassone-Corsi, “Multilevel Regulation of the Circadian Clock,” *Nature Reviews Molecular Cell Biology* 1 (October 2000): 65.

<sup>25</sup>Palmer, *The Living Clock: the Orchestrator of Biological Rhythms*, 135.

<sup>26</sup>Palmer, *The Living Clock: the Orchestrator of Biological Rhythms*, 143.

coordination, have the greatest muscle strength, etc.<sup>27</sup> The DNA in other creatures, like *Euglena*, also controls its temporal cycle by signaling when the algae should surface during low tide and retreat during high tide and nighttime. Palmer cannot explain why these creatures migrate since they do not need to seek the sun for photosynthesis. Yet, the molecular clocks built into their protoplasm signals the algae to migrate to the surface daily even when the algae are relocated to a laboratory.<sup>28</sup> The *Euglena* cannot override its molecular clock by will, and neither can humans. Even though humans can will their sleep cycles earlier or later, they cannot override their SCN to change melatonin levels, or cortisol levels, or body temperature, to align with their willed sleep cycle, increasing the potential for heart disease, gastrointestinal issues, and sleep disorders.<sup>29</sup> These DNA clocks not only “keep present time” for cellular activity but they also affect the organism’s present or how the organism orders its day, its sleep wake cycle, and its appetite.<sup>30</sup> The organism’s DNA influences its temporal life without the organism’s conscious (mind) awareness of how sizable a role the DNA plays in its day-to-day life cycles.

### **Interval Timer**

Another biological clock, the interval timer or the “stopwatch” in the brain keeps track of conscious estimation of time and plays a major role in how the

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<sup>27</sup>Karen Wright, “Times of Our Lives,” *Scientific American* (March 2012): 38-39.

<sup>28</sup>Palmer, *The Living Clock: the Orchestrator of Biological Rhythms*, 4-7.

<sup>29</sup>Wright, “Times of Our Lives,” *Scientific American*, 39.

<sup>30</sup>Catalin V. Buhusi and Warren H. Meck, “What Makes us Tick? Function and Neural Mechanisms of Interval Timing,” *Nature Reviews Neuroscience* 6 (October 2005) accessed August 30, 2012, [www.nature.com](http://www.nature.com), 756.

present is perceived. It times the second-to-minutes range and is involved in foraging, decision making, and memory in fish, rodents, primates, birds, human infants, and adults.<sup>31</sup> The research of Catalin Buhusi suggests that the integral timer functions as multiple independent clocks that create separate temporal contexts. These clocks can be stopped or reset independently and allows the organism to perceive physical duration as different durations in different temporal contexts. "Multiple temporal contexts are coded simultaneously by multiple internal clocks that can be independently run, stopped, or reset by the insertion of a gap into the signal."<sup>32</sup> The interval clocks time, psychological time, allows us to catch a ball or lose track of time when we are interested in the activity.

Interval timing enlists the higher cognitive faculty of the brain's cerebral cortex; it does not appear that other non-brain cells are involved in this process. At this time, the genes that control the interval timer have not been identified, but as scientists continue to study interval timing, the genes involved will most likely be uncovered. Alternatively, if this clock emerges from patterns of neuronal firing in real time, the relative importance of a genetic contribution may be diminished, but the essential biological nature of the clock will be unchanged. Due to cellular biology, the genes that control the interval timer will also be present in other body cells, even though they may not play a significant role in interval timing.

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<sup>31</sup>Buhusi and Meck, "What Makes us Tick? Function and Neural Mechanisms of Interval Timing," *Nature Reviews Neuroscience*, 756.

<sup>32</sup>Catalin V. Buhusi and Warren H. Meck, "Relativity Theory and Time Perception: Single or Multiple Clocks?" *PLoS ONE* 4 (2009) 8, accessed August 30, 2012, doi:10.1371/journal.pone.0006268.

Therefore, how we “time” the present, how we are aware of physical time as passing or holding still, is influenced by our brain cells and ultimately by our DNA, most likely with a direct correlation. Research suggests that there is not one universal timer but several timers that govern how we understand our present. These timers time as relative to the events occurrence and that these clocks interact at various levels. This allows us to time different events simultaneously, but the interval timer is not exclusive to humans; it is also found in birds, fish, and other mammals. Evaluating the potential impact of the interval timer has on a genetic philosophy of time remains challenging since this is still being researched. However, interval timing impacts our world perception and how we interact with our environment.

Both the circadian clock and the interval timer keep biological time that influence an organism’s temporality, including humans’ temporality. In a genetic philosophy of time, temporality is not tied to a mechanical clock, even though biologically the circadian clock runs on a 24 hour cycle and the interval timer times in the second to minute range. Time is real for an organism and not just a product of the brain but a way in which an organism exists, metabolizes, and interacts with its environment. Genetic time is not bound exclusively to the brain, but can be found actively timing in other cells throughout the body. The genes involved in timing occur in every nucleated somatic cell, even if they do not actively participate in timing. Furthermore, biological clocks affect how an organism understands and functions as a temporal entity.

### **Genetic Philosophy of Time: Future**

Organisms are active players in their future. They do not statically sit by anticipating their future. They dynamically shape their future. There are two inter-related circumstances to keep in mind when examining a genetic philosophy of time: (1) the organism as an individual, and (2) the organism as part of an evolving species. In considering the organism as an individual, two aspects arise: first, how does an individual genetically “time” the future and, second, how does an individual dynamically interact with its future potential? In turn, how does the future potential of an individual impact the species?

#### **Mitotic Clock**

The terminal timepiece or the mitotic clock keeps track of the present but also plays a role in the future of the organism. The mitotic clock keeps track of the present cellular division, or mitosis, the process where one cell divides into two cells. When cells divide to their maximum limit, between 60 and 100 divisions for cultured cells, cells stop dividing and stay in a state of senescence until they eventually die.<sup>33</sup> The mitotic clock does not keep track of chronological time, as in minutes or hours, but number of cellular divisions. This timepiece causes cellular senescence that leads to cell death and may also play a role in aging and cancer.<sup>34</sup>

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<sup>33</sup>Wright, “Times of Our Lives,” *Scientific American*, 41. Even cryogenically frozen cells “remember” how many divisions they have undergone before they were frozen and do not exceed their maximum number of divisions; see Jerry W. Shay and Woodring E. Wright, “Hayflick, His Limit, and Cellular Ageing,” *Nature Reviews Molecular Cell Biology* 1 (October 2000): 74.

<sup>34</sup>Shay and Wright, “Hayflick, His Limit, and Cellular Ageing,” *Nature Reviews Molecular Cell Biology*, 76.

The mitotic clock limits the number of normal somatic cell divisions due to the shortening of the telomeres, or the DNA repetitive sequences that cap the end of the chromosomes. They consist of thousands of six-base sequences (*TTAGGG* in humans) that protect the ends of the chromosomes during cell division. Chunks of telomeres are lost during cell division, thus progressively shortening the telomeres' length. As the cell divides, the telomeres become shorter until they reach a critical length, which halts further cellular division. At this point the cell continues to metabolize and move, but it will never grow again, and eventually dies.<sup>35</sup>

The mitotic clock keeps time that affects our future. If the mitotic clock fails to stop the cellular division at its limit, then the cell is abnormal, as seen in cancer, yet stopping cellular division results in cell death and eventually the organism's death.<sup>36</sup> Molecular oncologist Maria Blasco sees a significant correlation between telomere length and lifespan. She developed a clinical test for telomere length to determine a person's biological age, which can differ from chronological age.<sup>37</sup> If scientists verify Blasco's work that a direct link exists between telomere length and lifespan, then the mitotic clock not only keeps the present count of cellular divisions but also the future life potential of an organism, how long we will naturally live, if nothing unusual occurs.

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<sup>35</sup>Simone Mocellin, Karen A. Pooley, and Donato Nitti, "Telomerase and the Search for the End of Cancer," *Trends in Molecular Medicine* 19 (February 2013): 125, 126; Wright, "Times of Our Lives," *Scientific American*, 41.

<sup>36</sup>Manuel Collado, Maria A. Blasco, and Manuel Serrano, "Cellular Senescence in Cancer and Aging," *Cell* 130 (July 27, 2007): 223-233.

<sup>37</sup>*Life Length*, <http://www.lifelength.com/about-us.html>, accessed August 7, 2013.

## **Environment and Mutation**

The moment-to-moment stability of all organisms is maintained dynamically through inter-relations between the genome and the cell itself, between the cell and the organism, and between the organism and its environment. It is in this interaction between the organism's environment and genome that the phenotype, observable characteristics, of the individual arises. According to neurobiologist Steven Rose, "the expression of most genes is modified at several levels. It is affected by which other genes are present in the genome of the particular organism, by the cellular environment, by the extra cellular environment and, in the case of multicellular organisms, by the environment outside of the organism."<sup>38</sup> The individual organism has the capacity to adapt to environmental contingencies and to compensate for deficiencies in part because of its DNA and the mutations that shaped its current structure. A DNA mutation that occurred several generations before the current organism exists may be the change in the genetic code that allows that particular organism to thrive in a changing environment. This highlights the fact that mutations fall into three different evolutionary categories, those that are beneficial, those that are detrimental, and those that are effectively neutral but through various forces are maintained in the genome for some time. An event that occurred in the past may foster success in the future by transmitting that change to its progeny who in turn passes it to their progeny, increasing the number of

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<sup>38</sup>Rose, *Lifelines*, 132.



individuals who carry the mutation even if the mutation is not currently under strong selection.

Past or even present changes in the genome impact the individual's future, but also affect the success or demise of the species. A species that fails to continue to project progeny into the future because its environment is changing will eventually go extinct, while the species whose alleles permit adaptation to a new environment thrives.

Organisms are active players in their futures<sup>39</sup> and cells keep track of their future life potential, through the impact of multiple cellular divisions on future viability, but does that add up to the future as "real"? Does the future actually exist? Any cell's future may be in a way limited based on past division history . . . it will divide five more times than senesce, but does this future exist? Presumably there are probabilistic elements to this outcome (maybe three divisions more or seven) and so, the future has elements of uncertainty and probability that could be akin to a bounded expectation. In a genetic philosophy of time, future potential of an individual or species actually exists. Our cells time our future potential and mutation gives rise to future potential in the success or failure of an organism. Yet, is future potential more than expectation in a genetic philosophy of time? The short

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<sup>39</sup>See Rose, *Lifelines*, 141.

answer is yes.<sup>40</sup> Biologically organisms dynamically shape their future as an individual and as a species.

### **Genetic Philosophy of Time**

What is a genetic philosophy of time? A genetic philosophy of time illuminates how an organism, including *Homo sapiens sapiens*, utilizes and internalizes time affecting its functions, experiences, and understanding of its world. In this construal, time becomes a construct of the biological creature that fundamentally recognizes time as flowing irreversibly in the direction of past, to present, and into future.

Past time functions, for all creatures as a DNA record imbedded in the present that shapes the present and the creatures' future potential. The past exists in our present DNA and the DNA of other organisms, and enables us to be human or hydra, experiencing our world as human or hydra. All creatures' near past and deep past exists as record in their present, even though they have no conscious memory of it. The past exists in every somatic and brain cell in the human and plays a fundamental role in our present, while opening us up to our future possibilities.

Present time functions, for humans and other creatures, as a way to "keep or tell" time. In humans and other creatures, the body including the brain keeps time on a 24 hour cycle that is independent from a mechanical clock and orders their

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<sup>40</sup>The long answer is beyond the scope of this chapter because it entails looking at how different Christian denominations understand "waiting", which is personified in the different understanding of eschatology as an apocalypse or an eschaton. See Karl Rahner, "The Hermeneutics of Eschatological Assertions," *Theological Investigations 4: More Recent Writings* (Baltimore: Helicon Press, 1966), 323-346.

day-to-day activities and comprehension of events. Present time extends beyond consciousness to how our brain and body function as temporal, influencing interactions between creatures and life events, and how these events will impact the individual and also the species.

Future time exists as life potential that is dynamically shaped by our past and our present. Our being enables our becoming, in a physically manifested interaction between our genome and our environment, which occurs in all living creatures. DNA provides the flexibility or rigidity through mutations, and transmission that enables us to be open to the possibility of future. If the possibility of future did not exist, than the individual and the species would stagnate or stop becoming. The reality of future possibility exists in a genetic understanding of time and it drives change through inter-relationality.<sup>41</sup>

Past, present, and future possibility converge in our DNA and the biology that it interacts with through regulation and data retrieval. This influences how we understand ourselves temporally in a way that extends beyond “now”. All living organisms internalize, utilize, and exist in time that flows from past to present and into the future that encompasses all somatic cells. Temporality in genetics becomes a function of our DNA and our biology.

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<sup>41</sup>Relationality, “All being is oriented not just to itself but to others, as well as to the whole.” Stoeger, “God and Time,” 384; originally taken from Colin Gunton, *The One, the Three* (New York: Cambridge University Press, 1992), 194.

### **Genetic Temporality: Presence and Absence**

Presence and absence within the genetic temporal metaphor does not directly point to knowledge of God, but instead points to knowledge of the human as a creature among other creatures who shares the same building blocks, namely, DNA. Within this schema, the creature itself becomes foundational for discerning temporality. In the case of the human, the person him/herself becomes 'clock,' the measure of temporality that unpacks a biological understanding of presence and absence. In genetic time, temporality moves from human consciousness, as seen in Augustine, to encompass the whole person, which opens up new possibilities for thinking presence and absence.

Genetic time can be seen as what a "clock" measures with the "clock" being the human person whose DNA, biological structure, and environment provide the apparatus for keeping as well as utilizing time as "clock". The human "clock" acts as timer, counter, coordinator, and recorder. First, as timer and counter, the human "clock" measures human temporality as timed through biological information and information processing, creating an order and unity that regulates human processes grounded in relationality. The DNA interacting with the cellular apparatus, which interacts with the body's biochemistry, other cells, and the environment comprise a web of inter-relationality. The timer and counter keep ordered time that allows the function of the whole person with and within his/her environment. Temporality seamlessly brings together complex systems in coalescence, not on the narrow edge

of consciousness, but beyond consciousness integrating the cell, the organism, and the environment. The human as “clock” calls for a broader understanding of presence, which changes the Augustinian location of temporality from in the mind/soul/consciousness to include the entire person. The genetic temporal metaphor mirrors presence as relationality in harmony; where the present is a symphonic accumulation<sup>42</sup> or a web of intra and inter-relationships inside and outside the human body.

Second, as coordinator, the human “clock” regulates preliminal, liminal, and postliminal states, an oscillation between being and becoming as the DNA undergoes mutation, which nurtures future potential or destroys it. Liminality enables integration and cessation of information promoting ontological and epistemological shifts in reconfiguring DNA, potentially changing how past, present, and future generations function as temporal in their environment. The human “clock” as coordinator measures our inertial framework, the here and now of a particular human, yet it depends upon past ancestors, and provides potential for future generations. This opens up a new way of thinking about past as greater than just my individual memories, or my perception of history to include all those whose history led up to my “now” and potential future. Future is not simply available as anticipation, as Augustine asserts, but as biologically bounded possibility.

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<sup>42</sup>In the genetic temporal model the present as symphonic accumulation becomes a metaphor for how the body works in concert within, throughout, and with the environment, a presence of relationality, occurring at different levels simultaneously. Like a symphony our genes work in concert within the cell, with the body which includes the brain, and the environment, which influences how we biologically experience the present. It is not our DNA alone but our DNA functioning as part of a symphonic accumulation that elucidates presence.

Temporality reflects “now” or presence as not only the individual “now” but also the deep past, as well as, a future potentiality of becoming crystalizing through interaction with the environment and other factors from many possible futures.

Third, as recorder, the human “clock” keeps the measure of history in our DNA. Past does not disappear into nothingness or non-being, but perdures as a part of our DNA. Similarly, the future pasts of our descendants will carry some record of our present. This record of our species’ history is always present in our cells and to our cells, even if our conscious selves are unaware of its existence. The past is not merely available through the category of memory, but exists as present record in our DNA. The bodily mechanisms that permit our physical existence and that allow knowledge of any kind depend on the human “clock” as recorder to distinguish us from other creatures. We cannot escape our temporal past that shapes me as an individual, along with me as part of my species. Unlike Augustine who understands past as non-existent, yet recalled in memory, the human “clock” reveals and depends on our evolutionary past, which we carry within our cells.

### **Shape of Temporality**

The shape of temporality in genetics is not mediated by the creation relationship or by the contrast of eternity and temporality, which typifies Augustine’s understanding, but by the image of “code”: a coded record (past), a coded present (a range of possibilities), and a coded future (a probabilistic range and rule for future temporal utilization and understanding). Past exists not only in memory but in the DNA as present record. The present exceeds the immediate

“now” of consciousness to include a wider understanding that includes a symphonic accumulation, opening a breadth of possibilities. These possibilities from the past and the future coalesce to direct future potential. In the genetic philosophy of time, temporality moves from a created or ontological thinking of Augustine to a holistic relationality seen in the image of code.

Temporality as seen in a genetic philosophy of time calls for the expansion of the classical Christian understanding seen in Augustine. However, directly applying genetics, that thinks presence and absence in terms of the creature among other creatures, to theology, that thinks presence and absence of God in relation to the human, encounters difficulties in language and methodology. In order to respect the limitations and strengths of genetics and theology, an intermediary vocabulary and method needs to be established. The event phenomenology of Claude Romano will aid in developing both the transitional lexicon (Chapter Three) and median approach (Chapter Four) bringing together genetics and theology. By bringing together the elements found in Augustine with the elements found in a genetic philosophy of time, a new innovative way of thinking about the presence and absence of God will emerge.

CHAPTER THREE  
BRIDGE BUILDING: ESTABLISHING A VOCABULARY  
BY UTILIZING PHENOMENOLOGY

In order to build a bridge between the genetic philosophy of time and the classical Christian theology seen in Augustine, a mediating vocabulary needs to be established as foundation for a dialogue that will allow the objective voice found in science to “speak” to the subjective voice found in theology. Constructing a path for dialogue begins with a fruitful vocabulary, where the elements found in genetic temporality can address the temporal elements found in Augustine’s understanding of God. This chapter will utilize the phenomenology found in Claude Romano’s book, *Event and World*, to establish a fruitful vocabulary or a vocabulary whose definitions and ideas can provide meaning for both theology and genetics.<sup>1</sup>

Establishing a fruitful vocabulary requires first building a lexicon that expresses how humans understand themselves temporally in their world. How do we grasp being-in-time in the world around us? The philosophical study of phenomenology addresses this concern, but for fruitful lexicon building, the phenomenology must also be compatible with the biological science of genetics.

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<sup>1</sup>To fully understand the difficulty in establishing vocabulary for dialogue between science and philosophy, it is helpful to look at family resemblance concepts uncovered by Wittgenstein in *Philosophical investigations*, 65. It is here that Wittgenstein explains, that, even though a word or concept may have a common definition that definition, may not capture all the multiple features that word or concept may entail. See Michael Forster, “Wittgenstein on Family Resemblance Concepts,” *Wittgenstein’s ‘Philosophical Investigations,’* ed. Arif Ahmed (New York: Cambridge University Press, 2010), 66-87.



This phenomenology does not need to endorse the biological sciences, nor does it need to utilize biology in its description of humans' being-in-the-world; what is essential is that it aligns itself with natural science by using concepts that can have similar meaning in genetics as in theology.

Romano approaches phenomenology from the prospective of birth, as opening up human possibility. For Romano, birth is the source of possibility that opens the person to the events that characterize their being-in-the-world; birth occurs before a person's being-in-the-world and opens the possibility for their life world.<sup>2</sup> The concept of a birth as the moment when a person becomes open to an authentic life reverses the interpretation seen in Martin Heidegger's *Being and Time*. For Heidegger, a person's being-in-the-world or Dasein occurs only when a person turns away from the collective understanding of the world of "Them" to face their own individuality or mortality, allowing one to question the meaning of existence. Thus, Heidegger establishes death or contemplation upon one's morality as the authentic "now" that uncovers everydayness.<sup>3</sup> However, by using the starting point of birth, Romano's phenomenology provides a common concern with genetics, a biological study based on the creative regeneration seen in evolution, in which birth also opens up possibility for being-in-the-world.

This chapter will examine Romano's phenomenology in four steps: first, it will investigate Romano's understanding of "event" by exploring Romano's

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<sup>2</sup>Claude Romano, *Event and World* (New York: Fordham University Press, 2009), 19.

<sup>3</sup>Martin Heidegger, *The Concept of Time* (Malden: Blackwell Publishing, 1992), 13.

classification of events as “innerworldly fact” and events in the “*evential sense*” and second, by turning toward the “*advenant*.” The third step will recap the vocabulary Romano’s work utilizes. The fourth step will examine event phenomenology as a temporal metaphor in terms of presence and absence.

### **Event**

According to Romano, an event exhibits three phenomenological traits. First, an event in the strictest sense is open to a plurality of beings, and “is the pure fact of occurring” without an ontic attribute, an intended person.<sup>4</sup> Event happens to no one in particular and is only revealed after it occurs. In other words, an event is something that happens to whoever is present and is only understood as an event when it is reflected upon. An example of event in the strictest sense would be lightning, which occurs to no one in particular and whoever witnessed the lighting grasps it as event only after it happens.

The second phenomenological trait comes out of the inability to ascribe any ontic support for the assignation of the event. Since an event does not necessarily occur to someone in particular, yet, the possibility exists that an event could impact someone; Romano distinguishes two understandings of events: (1) events as “innerworldly facts” and (2) events in the “*evential sense*”.<sup>5</sup> These two categories

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<sup>4</sup>Romano, *Event and World*, 26.

<sup>5</sup>Romano, *Event and World*, 27.

represent both event as fact and event as having meaning<sup>6</sup> for a subject, where innerworldly facts occur without being ascribed to a subject, while events in their *evential sense* can be ascribed to a subject.<sup>7</sup>

The third phenomenological trait focuses on how meaning is ascribed to an event. Romano sees innerworldly facts as fundamentally indeterminate but acquiring meaning in relation to their *evential context*.<sup>8</sup> Romano classifies events that occur to no one in particular as innerworldly facts, which differ from events in their *evential sense* whose subject is determinable because the event happens to the particular subject.<sup>9</sup> An event could start out as an innerworldly fact and become an event in their *evential sense*. Returning to the lightning, which initially occurred to no one in particular as innerworldly fact, if that lightning struck an individual, it would cease being just an innerworldly fact and would become an event in its *evential sense*. Upon the subject's reflection on being struck by lightning, the innerworldly fact takes on meaning within its *evential context*. In other words, what does being struck by lightning mean to the person who was struck? The lightning becomes more than a fact. It takes on a meaning to the subject.

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<sup>6</sup>For Romano "meaning encompasses the significance or import of an event upon someone's understanding of their being-in-the-world." Romano, *Event and World*, xii.

<sup>7</sup>I will refer to the human person to which an event happens as "the subject." However, Romano would take offense at reducing the person to subject. For Romano, "subject" limits the person from being impacted by an event. "This characterization fundamentally excludes that a human being could be touched by something like event, upended or transformed by it" (51). Instead, Romano refers to the person as an *advenant* or the one who observes and interprets an event (38, 52). Romano, *Event and World*.

<sup>8</sup>Romano, *Event and World*, 27.

<sup>9</sup>Romano, *Event and World*, 27.

These three phenomenological traits of an event, lack of ontic assignation, two categories of events, and acquisition of meaning by reflection upon the context of the event, form the foundation for Romano's phenomenology. For Romano, the subject defines his/her being-in-the-world through the category of event. In order to fully unpack Romano's phenomenology of event, further examinations of the categories of innerworldly facts and of events in their evential sense are necessary.

### **Innerworldly Facts**

An event as innerworldly fact, as described above, occurs to no one in particular and ranges from events perceived by the senses (a car honking), to events perceived by the mind (forming a thought), or to actions taken (executing a task). According to Romano, innerworldly events display three key characteristics: they are pure occurring;<sup>10</sup> they are limited to pre-existing possibilities;<sup>11</sup> they are ascribed meaning by the world in which they occur.<sup>12</sup>

For Romano, innerworldly facts to be considered a phenomenon must take place in front of a witness, a subject who grasps the event. As pure occurring, innerworldly fact "is able to make appear that which occurs in and of itself, without actually having to 'do' anything whatever."<sup>13</sup> In its occurring, the event shows-forth only itself to whoever observes the event without extemporaneous meaning. "They

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<sup>10</sup>Romano, *Event and World*, 29.

<sup>11</sup>Romano, *Event and World*, 28.

<sup>12</sup>Romano, *Event and World*, 38.

<sup>13</sup>Romano, *Event and World*, 28.

[innerworldly facts] *occur only of themselves and 'open' only to themselves . . .*"<sup>14</sup>

Therefore, innerworldly facts do not have a privileged subject but show themselves in and of themselves.

Similarly, innerworldly facts are limited to pre-existing possibilities and may or may not change a subject's perception. They happen to the subject as pure spectator, and do not cause the subject to understand themselves from the innerworldly event onward.<sup>15</sup> Thus, the innerworldly event does not upend the subject's world, radically marking their existence as that which came before the event and that which came after the event. Because innerworldly facts do not reorder a person's world, they do not cause a reevaluation of self and they do not necessarily open the person to the possibility of radical change. Innerworldly facts happen to the person but do not cause the person to question their selfhood.<sup>16</sup> Therefore, innerworldly facts are events that do not challenge the subject's assessment of themselves.

Innerworldly facts garner their meaning from the world in which they occur. Innerworldly facts do not take on meaning beyond the horizon the world ascribes to them.<sup>17</sup> Therefore, innerworldly facts do not evoke or create new meaning for the subject. The contextual and explicative understanding of innerworldly fact is

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<sup>14</sup>Romano, *Event and World*, 29.

<sup>15</sup>Romano, *Event and World*, 29.

<sup>16</sup>Romano, *Event and World*, 30.

<sup>17</sup>Romano, *Event and World*, 27.

limited to receiving its interpretive possibilities from the world.<sup>18</sup> Thus, innerworldly facts do not break open nor bring forth groundbreaking significance. Instead they frame the mundane day-to-day events.

For Romano, innerworldly facts do not play a defining role in the human adventure or human life, because they happen to nobody in particular and they do not challenge the subject to reevaluate nor change their mode of being. Innerworldly facts are impersonal events, but not all events are benign, passing through the subject's life without much notice or impact. Some events are life changing and significantly impact the subject's self understanding. For Romano, these events fall into the category of events in their *evential sense*, events that originate meaning and garner meaning from the world they themselves create.<sup>19</sup>

### ***Evential Event***

Events in their *evential* sense or *evential* events, as I will refer to them, share four characteristics, according to Romano. *Evential* events have a determinate assignation; they illuminate their own context; they contain their own possibilities; and they open time.<sup>20</sup> First, *evential* events, unlike innerworldly facts, happen to someone. Their subject can be determined, even if the event at the outset was not intended to occur to someone in particular. Remember the lightning; at the outset, the lightning had no intended subject. As a natural phenomenon, it falls into the

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<sup>18</sup>Romano, *Event and World*, 38.

<sup>19</sup>Romano, *Event and World*, 38.

<sup>20</sup>Romano, *Event and World*, 45-46.

category of innerworldly fact. But once the lightning strikes a person it alters its assignation from nobody to somebody. The event no longer occurs to no one in particular but now can be assigned to someone, “me” who upon reflection can ascribe meaning to the event. The impersonal or mundane character of innerworldly fact falls away once an event is recognized by a subject as *evential*.

Second, *evential* events illuminate their own context as opposed to being reduced to them.<sup>21</sup> It signals a new world, a new meaning, and a new way of being-in-the-world.<sup>22</sup> The world of the subject is reconfigured by the *evential* event; the horizon of meaning opens itself up to the human adventure.<sup>23</sup> Referring back to the lightning example, lightning that just occurs as innerworldly fact remains an electrically charged flash of light, but once the lightning strikes a subject, it changes from an innerworldly event to an *evential* event that no longer takes its meaning from the world in which it occurred. Instead, the *evential* event creates new meaning. The lightning strike generates new meaning for the subject who now finds him/herself changed from the event either physically, mentally, or emotionally. The world of the subject, the horizon of meaning opens up to change. The *evential* event of being struck by lightning reconfigures the way the person understands their being, either positively or negatively. The *evential* event opens a horizon of

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<sup>21</sup>Romano, *Event and World*, 45.

<sup>22</sup>Romano, *Event and World*, 38.

<sup>23</sup>Romano, *Event and World*, 45.

meaning, a world, or a new stage for the human adventure, the human being-in-the-world.

Third, *evential* events are unconnected to any prior condition; they create their own origin. They are absolved from the antecedent causality and originate in its self. Unlike innerworldly facts whose meaning can be reduced to a known definition, *evential* events cannot be reduced to just another fact in the world.<sup>24</sup> *Evential* events upend their own context by their an-archic bursting forth by the possibility of making possible.<sup>25</sup> The lightning strike, mentioned above, becomes possibility, the possibility to reconfigure the being-in-the-world for the subject. It transcends its actualization as a flash of light into possibility that constructs new meaning.

Fourth, according to Romano, *evential* events are not dateable, but instead they open time or temporalize it.<sup>26</sup> Because *evential* event overflows the present of its actualization, Romano understands that *evential* event touches the subject's past, present, and future.

[A]n event is never brought about in the present, never *presented* on a temporal horizon: it opens an entirely new future and is given wholly in the movement of this *futurition* by which possibilities come about, these later appearing utterly impossible from the view of the present and the past. Thus, an event introduces a fissure between the past and

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<sup>24</sup>Romano, *Event and World*, 42.

<sup>25</sup>Romano, *Event and World*, 43.

<sup>26</sup>Romano, *Event and World*, 46.



the future, from which time itself wells up in the diachrony of its radically burst open and non-synchronizable times.<sup>27</sup>

Romano understands an *evential* event to occur not in the present but in the past. It is only after the subject becomes aware of the event as altering their way of being-in-the-world that an innerworldly fact becomes an *evential* event. The *evential* event obtains meaning not in the present, in which it occurs, but as the past after the subject reflects upon the event in the future. After the event has passed or happened, its radicality, its possibility, becomes evident and opens a new future for the subject. Thus, these events open time to the person because the subject sees these events as the temporal fabric of their life lived, marking defining moments that may or may not occur linearly. Linear time ceases to determine the being-in-the-world for the subject who understands their lives as *evential* events that alter and inform their day-to-day existence. A person understands their lived life as a series of interruptive *evential* events, rather than a linear birth to present continuous temporal path. These interruptive life altering events cause a “fissure” between past and future. They disrupt linear time and thus, open time to a non-linear understanding that bring with it new self-meaning and new possibilities.

*Evential* events transform the way subjects view their life from a linear temporal existence to a non-synchronizable time marked by *evential* events. “An *advenant* [subject] ‘is’ nothing other than what *comes to light, happens, or occurs* from events; he ‘is’ simply the process of his own ‘subjectivation’, a process

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<sup>27</sup>Romano, *Event and World*, 46.

continually on the way.”<sup>28</sup> Our being-in-the-world, how humanity understands itself in the world, is not measured by a clock, but understood through *evential* events that provide meaning and context to the human life and these events occur temporally.<sup>29</sup>

For Romano, *evential* events form the backbone of humanity’s being-in-the-world. It is through these events that the lived life understands itself and the world around it. *Evential* events open up meaning for the person by radically altering their current mode of being and by providing meaning beyond the mundane. These *evential* events also present the mode in which the person understands their life in time, as a series of events, opposed to a linear calendar.

### **Evential Hermeneutics**

Thus far, this chapter has examined how Romano frames the notion of event as foundational for how a person understands their existence from the categories of innerworldly facts and evential events. Further development of the notion of evential events and how it functions for human life and temporal existence comprise the next areas of study. Romano approaches the study of the person within their context from the point of view of the subject as *advenant* or the person to whom adventure happens within the context of their lives. Romano examines how evential hermeneutics affect the *advenant*. In order to investigate Romano’s evential hermeneutics, this section will, first, investigate how the person understands

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<sup>28</sup>Romano, *Event and World*, 55.

<sup>29</sup>Romano, *Event and World*, 55.

evential events; second, consider birth as advent; third, explore eventualities' relation to possibilities; fourth, look into selfhood; and, fifth, delve into encounter.

### **Understanding Evential Events**

The first task Romano undertakes in elucidating his evential hermeneutics is the task of explaining understanding, including how science usually approaches phenomenology, how the person comprehends evential events, and how these evential events affect the world.

According to Romano, "understanding" as seen in psychology, anthropology, sociology, ethnology, and psychoanalysis approach the person and their life events from the perspective of facts and their causes, an innerworldly approach that even upon closer analysis only uncovers "motives" and "drives" and acts more as explanation.<sup>30</sup> For these sciences along with the natural sciences, Romano sees this method of "understanding" as essentially "explaining" with different modalities distributed among the sciences. In essence, the world understood by science seeks causes and motives, which falls short in providing a mode for understanding evential events. Evential events exceed this typical scheme for ascribing meaning. They require a deeper definition of understanding that examines "the extent to which the world will never be the same for me after their occurring."<sup>31</sup> Evential events call for more than starting with preexisting possibilities, which do not

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<sup>30</sup>Romano, *Event and World*, 59-60.

<sup>31</sup>Romano, *Event and World*, 60.

provide a final reason. They necessitate an understanding of meaning for me the *advenant*.<sup>32</sup>

But what manner does evential understanding take, if not from motives and drives? How does the *advenant* understand evential events? Romano supplies the answers by stating,

... understanding is the primary attitude, prior to any other, in which an *advenant* constantly holds himself and by which he always relates to all that happens to him: a prereflexive and pretheoretical comportment that is inseparable from the way in which an *advenant* ceaselessly advenes<sup>33</sup> to himself and that is the sole ground on which every explicit theory can be built up.<sup>34</sup>

According to Romano's definition of understanding of an evential event, understanding is not projecting toward a meaning in conformity with a prior context but forms the foundation where the *advenant* experiences event. The meaning of event is in-comprehensible within the worldly context that explains it and is "only comprehensible in the conformity with meaning that well up with it..."<sup>35</sup> It is through the evential event that meaning and understanding occur, which exceeds explanation of fact.<sup>36</sup>

The *advenant* "understands" the evential event as it opens new meaning for the *advenant*, and continues to reinterpret the event as life unfolds. The evential

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<sup>32</sup>Romano, *Event and World*, 60.

<sup>33</sup>The word "advenes" comes from the French word *advenir* (to happen). Romano, *Event and World*, ix.

<sup>34</sup>Romano, *Event and World*, 61.

<sup>35</sup>Romano, *Event and World*, 62.

<sup>36</sup>Romano, *Event and World*, 65.

event collapses the previously understood context of the world for the *advenant* and recreates it.<sup>37</sup> After an evential event, life takes on a different meaning. Imagine being struck by lightning; after the event, the world takes on new meaning. One might be so grateful for being alive that they undergo a complete transformation or if the strike left one physically disabled, then the event would radically change the world for that person. This collapse of the previous context redefines being-in-the-world for that person.

### **Birth as Advent**

The second task Romano undertakes in elucidating his evential hermeneutics is the task of revealing birth as advent. Romano notes that birth is the core of adventure/life since it is the first event of evidential hermeneutics and thus, it is the origin and inaugural event that precedes all other events.<sup>38</sup> Birth opens an *advenant's* world, allowing all other events to occur. Because birth marks the inaugural event that initiates all other events, it garners a special status, according to Romano, the status of "the event of my advent."<sup>39</sup> As advent, birth makes possible all possibilities; it sets in motion the adventure of the *advenant*, the being-in-the-world<sup>40</sup> for the person who is born. Without birth there would be no life to live, no

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<sup>37</sup>Romano, *Event and World*, 65-66.

<sup>38</sup>Romano, *Event and World*, 70.

<sup>39</sup>Romano, *Event and World*, 70.

<sup>40</sup>Birth itself cannot be thought of as being-in-the-world in a proper sense. The person "is in the world only inasmuch as he is born into it." Romano, *Event and World*, 71.

eventual events, and no phenomenology. Birth is the advent of life, the source of possibility and meaning, and opens the *advenant* to future events.<sup>41</sup>

Birth not only opens the future possibilities for the *advenant*, it also opens the past. Birth exposes the *advenant* to a history older than just the history of the person. "They [the possibilities that birth affords] circumscribe and invest my adventure from the outset, by putting me in relation to an immemorial history older than *my* history, and one that is properly that *of others*."<sup>42</sup> Birth opens the *advenant* to the history of their parents and then to all those who came before them, bringing along with it the possibilities that that history affords. Therefore, in the event of being born, the *advenant* shares a history with those who have come before them even before the *advenant* creates a history for him/herself, and in turn shares that history with those who are yet to come.<sup>43</sup> Romano notes that it is not others who open the past to *the advenant*, such as a parent, but through the impersonal event of birth that others can enter the *advenant's* horizon.<sup>44</sup> In opening the past and the future, birth becomes the advent of all possibility for the *advenant*, determining the meaning of all other events.

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<sup>41</sup>Romano, *Event and World*, 72.

<sup>42</sup>Romano, *Event and World*, 75.

<sup>43</sup>Romano, *Event and World*, 78.

<sup>44</sup>Romano, *Event and World*, 80.

### Eventualities' Relation to Possibilities

The third task Romano undertakes in elucidating his eventual hermeneutics is the task of understanding “eventuality” and its relation to possibility. For Romano, “eventuality” is the possibility that arises from an eventual event.<sup>45</sup> Yet, this simple definition does not take into account the enormity “eventuality” poses for the *advenant*. “Eventuality” of a genuine eventual event changes the *advenant*, leaving them no longer the same, and reconfigures their intrinsic possibilities, opening them to future possibilities. Eventuality gives “possibility its meaning by giving it a future-loading.”<sup>46</sup> This future possibility comes without dependence upon the *advenant*'s present.<sup>47</sup> “This eventuality of the possible is what rebounds on me and is delivered from a future that exceeds my present, conferring ‘gravity’ on the projection and unsubstitutability on the one who projects.”<sup>48</sup> The *advenant* understands oneself from the event that opens weighty future potential. In the eventual event, the future possibilities exceed the present, whether positive or negative for the *advenant*. Going back to the lightning, the lightning strike irreversibly changes the one who is struck without regard for the person's present. Through the eventual event the person becomes confronted with possibility now in the present but also in the future.

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<sup>45</sup>Romano, *Event and World*, 85.

<sup>46</sup>Romano, *Event and World*, 86.

<sup>47</sup>Romano, *Event and World*, 86.

<sup>48</sup>Romano, *Event and World*, 86.

Do eventual events only open possibility or do they become actualized?

According to Romano, eventuality is not opposed to actualization, except in birth and death,<sup>49</sup> because events are also facts.<sup>50</sup> Romano calls this “innerworldly actualization” and this allows a possibility to become an actuality through decision on part of the *advenant*, which opens possibility beyond the decision and confers meaning on a human adventure.<sup>51</sup>

### **Selfhood**

The fourth task Romano undertakes in elucidating his eventual hermeneutics is the task of examining selfhood. For Romano, “selfhood signifies an *advenant’s* capacity to be open to events, insofar as these events happen to him unsubstitutably, the capacity to be implicated himself in what happens to him, or the capacity to understand *himself* from a history and the possibilities it articulates.”<sup>52</sup> Selfhood is that which allows the person to be receptive to eventual events, to recognize these events as occurring uniquely to him/her, and to identify him/herself as historically grounded in the event along with the opportunities it affords. As the eventual events occur, it is in the selfhood that one can comprehend that in each instance at different

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<sup>49</sup>According to Romano, death and birth are limit experiences that have meaning outside themselves and thus cannot be understood as evidential event. “I am born has its meaning essentially *outside itself*; that I am never the measure of this meaning by resolutely anticipating my ‘end.’ This meaning which always remains opaque to me, is literally in-com-prehensible for me, impossible to embrace in a projection of understanding, in virtue of the intimate articulation of birth and death.” *Event and World*, 185.

<sup>50</sup>Romano, *Event and World*, 88.

<sup>51</sup>Romano, *Event and World*, 89.

<sup>52</sup>Romano, *Event and World*, 92.



periods of their history he/she has been transformed.<sup>53</sup> Selfhood allows recognition of the possibilities an eventual event has for “me”. The *advenant* the eventual event advenes understands that they are the ontic assignation of the event through their selfhood. I am the one whose possibilities open up because I was struck by lightning.

### **Encounter**

The fifth task Romano undertakes in elucidating his eventual hermeneutics is the task of explaining encounter. Here Romano looks at how encounter does not necessarily rely on memory, and how encounter intertwines an *advenant's* adventure with another's, thus reconfiguring possibility.

First, in encounter, as eventual event, there is a necessary temporal disparity for “encounter happens always *on the margin* of its actualization.”<sup>54</sup> Therefore, encounter is not the object of memory, because it cannot be reduced to the moment of introduction, since it transcends introduction by reconfiguring the *advenant's* world, whether they recognize it or not. It may even occur against the *advenant's* will.<sup>55</sup> Romano sees encounter as escaping reduction to a phenomenon of an instant which takes place in a definite present. Instead, encounter establishes a beginning that never ends, opening ceaseless new possibilities as “continuing encounter”.<sup>56</sup>

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<sup>53</sup>Romano, *Event and World*, 97.

<sup>54</sup>Romano, *Event and World*, 123.

<sup>55</sup>Romano, *Event and World*, 123.

<sup>56</sup>Romano, *Event and World*, 125.

True encounter takes place as eventual event that exceeds the moment of introduction in the memory and takes on the perpetual eventuality.<sup>57</sup>

Second, encounter entwines adventures and changes how an *advenant* understands their world. For Romano, “an encounter signifies the irruption of another world in an *advenant’s* own world.”<sup>58</sup> Encounter opens up the world of another by permitting the *advenant* to appropriate the other’s possibilities and redeploying them as the *advenant’s* own. Thus, encounter opens the possibility of reconfiguring the *advenant’s* world and its possibilities in another way by accessing another’s world.<sup>59</sup> In encountering another, the *advenant* becomes open to the ceaseless possibilities the other affords.

### **A New Vocabulary**

Using the survey of Romano’s phenomenology of eventials, a lexicon that functions for both genetics and theology can be envisioned. So far, this chapter provides a rough sketch of Romano’s broad vision that focuses upon seven key concepts that will aid in forming the new vocabulary. They include: innerworldly fact, eventual event, advent, understanding, eventuality, innerworldly actualization and encounter. This section will hone that vision by presenting a description of each of these concepts to make available a vocabulary for dialogue between genetics and phenomenology that in turn can be applied to theology.

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<sup>57</sup>Romano, *Event and World*, 127.

<sup>58</sup>Romano, *Event and World*, 128.

<sup>59</sup>Romano, *Event and World*, 129.

**Innerworldly Fact**

Innerworldly facts take on the meaning of day-to-day ordinary occurrences that do not impart new meaning that upends someone's being-in-the-world. For example, they could be facts of science, such as, all cells metabolize, or they could be facts of theology, such as, Augustine was influenced by Plato. These facts do not interrupt human lives, forcing a reevaluation or an alteration of life, nor do they offer new possibilities.

**Evential Events**

Evential events have a determined subject, they happen to someone; they illuminate their own context; they contain their own possibilities, and they open time. One very key point within this classification includes the idea that evential events do not always announce themselves. They can occur without the person's notice, and become evident only later. Evential events form the way humans understand themselves as temporal. It extends beyond mere facts to encompass how one understands one self.

**Innerworldly Actualization**

Innerworldly actualization explains how innerworldly fact and evential events actualize or become fact. This application extends itself to include evential events because evential events can also be facts through decision on the part of the person. As facts, evential events bring human life an excess of possibility, even though they can be viewed as fact. Being diagnosed with cancer is a fact that is also an evential event because it radically changes the world of the person.

## **Advent**

Advent marks the beginning of adventure or life, which occurs at birth. Even though advent opens the person up to an excess of possibilities, it is not an eventual event, because it occurs outside of the person's ability for reflection. We do not remember our births. Advent opens a person up to their adventure, but it cannot be thought of as being-in-the-world because the person is in the world due to birth, but not able in the process of birth to participate in the world themselves.<sup>60</sup> Because advent opens a person to possibility, meaning, and adventure, yet, escapes classification as eventual event, it holds a unique and important status for the person both in existence and in history.<sup>61</sup>

## **Understanding**

Understanding takes on a greater or thicker description than just explanation of fact, going beyond it to redefine the world of the person. It is through understanding that a person grasps that their world has been upended by an eventual event and will never be the same as before the event. Understanding allows the person to recognize, redefine, and reinvent their being-in-the-world.

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<sup>60</sup>Giving birth would be seen as eventual event since it radically open possibility for the parents who find their world upended.

<sup>61</sup>Birth opens the history of all who come before the person and those who are yet to come. It opens the past and the future to the person's possibilities and meaning.

**Eventuality**

Eventuality reconfigures the intrinsic possibilities of the person and opens the person to future possibilities. Eventuality is future-loaded, where the possibilities delivered from the future exceed the present and change the past understanding of world.

**Encounter**

Encounter with another establishes a beginning of possibilities that never ends, ceaseless possibility as one person's life becomes a part of another person's life. The interaction between these two lives changes how one understands their being-in-the-world. It opens up the person to another's world and thus, reconfigures their way of being, which now includes the other.

**Event Temporality: Presence and Absence**

For Romano, event brings together consciousness and phenomenology as a way to measuring being-in-the-world as punctuated by non-linear meaning. The "clock" or measure of time becomes the defining evential events that shape a person's comprehension of themselves and not linear physical time. It is evential events that measure time for Romano. These events disrupt linear temporality to form a new temporal meaning of beginnings found in the person's life world. Event as "clock" does not flow from moment to moment but radically disrupts and reorders time, causing one to measure life by the defining events that open up potential and ascribe import.

Furthermore, event as “clock” moves time from the mind, as seen in Augustine, to the life world of the individual. The life world encompasses the mind, which perceives and reflects on an event, along with the action that one takes as a result of an event. The combination of mind and action ground temporality in events, as opposed to grounding it in cosmic time. An individual may locate an event in cosmic time, such as in a particular year, but it is not the year that ascribes temporal meaning. It is the event itself that becomes the measure of the individual’s life world, which is not the biological world seen in Chapter Two. Therefore, Romano transfers temporality from the initial moments when God created time, as seen in Augustine, to what time creates as event.

### **Shape of Temporality**

Temporality as event shifts the structure of presence and absence understood in Augustine from the mind to life event. For Augustine, the temporal presence is the present moment or “now” distended between the future, while the ontological presence is the antinomy observed between eternity and temporality. Whereas for Romano, presence reflects the mind in concert with action as eventful; the reconfiguring of the intrinsic possibilities delivered from the future, which exceeds the present “now”, changing past understanding of the world. Presence reveals and embraces radical change that emerges in bursts as event that interrupts and upends temporality.

Event phenomenology acknowledges the role of the mind along with the life world of the individual, an expansion of what we see in Augustine. However it does

not take into consideration the role biology plays in the actions of the individual that contribute to how that individual comprehends and interacts with and within their temporal life world. The next step in opening dialogue between genetics and theology, entails creating a method or model that brings together the life world with the biological world of the individual by using the lexicon of terms and ideas that event phenomenology affords. Chapter Four will bring together the “clock” as the human, seen in Chapter Two, and the “clock” as event to uncover an innovative model for temporality that can be applied to Christian theology.

CHAPTER FOUR  
BRIDGE BUILDING: ESTABLISHING A MODEL BY COMBINING  
TIME IN GENETICS AND PHENOMENOLOGY

Next, a method or model needs to be developed that will encompass phenomenology and genetics to uncover a concept of time that establishes a biological phenomenological temporal being-in-the-world, enabling a new way of addressing human temporality. This temporal vision or model that phenomenology informed by genetics assembles will provide the common ground for dialogue between genetics and theology and will facilitate a new mode for examining how we as temporal creatures comprehend the presence and yet absence of God in our day-to-day lives.

By bringing together the objectivity of science and the immediacy of lived experience, a richer conception of our temporal experience emerges. Because we are not just our DNA, nor are we experiencing our temporality outside of our biological make-up, a comprehensive temporal view needs to be established that includes both our biology and our life experience. In other words, our biological life world comes together with our phenomenological life world to develop an overall picture of temporality that attends both science and philosophy. This chapter will integrate genetic time as seen in Chapter Two and Romano's event phenomenology



as seen in Chapter Three to reveal a new model of a biological phenomenological understanding of temporality.

### **Heuristic Analogue**

Before discussing past, present, and future, it is important to understand how different ways of knowing found in biology and philosophy enhance our understanding. To do this, an investigation that is attentive to the limitations of both philosophy and biology needs to be undertaken that compares and contrasts the key ideas from both fields. Although Romano clearly states, “[s]cience *de-worlds innerworldly facts* eliminating non-pertinent causes which interfere with scientific theory . . .”<sup>1</sup> and demonstrates skepticism in bringing phenomenology and science together,<sup>2</sup> a heuristic analogue exists between genetics and Romano’s phenomenology.

To read Romano informed by the genetic philosophy of time is to discover similarities that come to light in regards to event and mutation, along with advent and transmission of DNA that will facilitate the discussion of temporality. In order to fully investigate these correlations and explore their parallels and differences, this section will examine Romano’s phenomenology through the lens of genetics by

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<sup>1</sup>Romano, *Event and World*, 42.

<sup>2</sup>Romano demonstrates his skepticism of science contributing to phenomenology when he discusses eventual hermeneutics. For Romano, science sets out to find the causes of human action, which he sees as different from seeking understanding and meaning. Therefore, all sciences for Romano cannot adequately explain eventual events. Romano, *Event and World*, 58-60. I would agree that alone science cannot adequately address being-in-the-world, but I would also argue that ignoring our biology limits phenomenology. Science ‘speaks’ in cause and effect language, therefore, using said language is unavoidable. However, human biology is an important factor in how we understand and ascribe meaning. Ignoring science or downgrading science’s value limits pertinent knowledge and prevents us for exploring ourselves holistically.

almost, but not quite, laying the two seemingly different ways of knowing next to each other in order to explore just how similar and/or deeply analogous the concepts of transmission and mutation in genetics compare to the concepts of advent and event in Romano's phenomenology respectively.

### **Transmission and Advent**

Romano, while explaining the importance of birth in his eventual hermeneutics, makes two key assertions: first, birth is advent for the *advenant*, the person beginning their life adventure, and second, birth is not an eventual event, a life world altering event for the person born. First, Romano understands birth as the origin and inaugural event that opens the *advenant* to their life's adventure. It is the first event that precedes all other events and allows all other events to occur, and as such, it is the "the event of my advent."<sup>3</sup> This brings us to his second point; even though Romano understands that birth marks the beginning of adventure, it is not an eventual event, because it occurs outside the person's ability for reflection.<sup>4</sup> Therefore, birth cannot be thought of as being-in-the-world, although it marks the beginning of one's life adventure.

Reading these two aspects of advent through a genetic lens requires a slight adjustment to Romano's first assertion because genomic advent occurs earlier than birth. In genetics, the inaugural event occurs before birth with the transmission of the parents' DNA to the offspring, which begins in meiosis, with haploid gametes,

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<sup>3</sup>Romano, *Event and World*, 70.

<sup>4</sup>Romano, *Event and World*, 71.

and culminates in conception, with a diploid zygote containing a unique, yet similar complement of DNA to its parents. The unique complement of DNA opens the possibility of all life events that follow, including birth. Genetics understands advent as occurring before birth, because the DNA that makes life possible exists and functions within the individual at conception.<sup>5</sup> Genetics can apply Romano's second point to transmission as not an eventual event as defined by Romano, because the individual at conception or birth cannot reflect upon transmission's importance and in many cases will not progress to birth. Thus, biologically an individual's beginning occurs with transmission of their DNA then proceeds through gestation and birth, but no part of this process is an eventual event.

One must argue that only after birth can life events occur; that before birth, life is not guaranteed. Therefore, only after a viable birth can one's adventure begin and thus, can one be truly open to possibility, which resonates for both phenomenology and genetics. It takes a viable birth for that individual to begin experiencing being-in-the-world. However, the seminal event that makes birth a possibility is the transmission of DNA from the parents to the offspring. Without the

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<sup>5</sup>Interestingly, stable genomic advent in the human is however a probabilistic event, with the intimate dependence of the zygote on implantation and establishment of the chorion, placenta, and amnion and avoidance of the hazards of meiotic catastrophe producing unviable zygote genomes. Surprisingly, fully two-thirds of conceptuses are lost either prior to association between the zygote and mother (implantation) or early gestation through wholly natural and stochastic processes. Even when viable embryos are established in the uterus 15% of fetuses will be lost to natural miscarriage in mothers younger than 35, rising to 48% of fetuses in women older than 35. Thus aggregate risk of miscarriage in women over 35, incorporating both, preclinical conceptus loss and clinical miscarriage, approaches 5/6ths of all zygotes. Biological advent is an event of not only significance to the conceived individual but in most cases the product of a series of false starts. Elisabeth Clare Larson, Ole Bjarne Christiansen, Astrid Marie Kolte, and Nick Macklon, "New Insights into Mechanisms Behind Miscarriage," *BMC Medicine* 11 no. 154 (2013). doi: 10.1186/1741-7015-11-154.

unique DNA that informs, directs, and orders an individual's biological processes, including prenatal development, life is not even a possibility. Humans as biological creatures could not experience being-in-the-world without their human genome, both because humanity could not exist without genetic instructions and because DNA plays a significant role in how an individual interacts with their environment. Thus, biologically the advent of life, the source of all possibility and meaning is the transmission of DNA.

Moving the moment when adventure begins from birth to transmission of DNA does not challenge the importance of birth for the *advenant*. The shift from birth to transmission might seem insignificant in the grand scheme of a life lived, but is monumental in discussing temporality, because biological clocks begin keeping time from the moment of conception until cellular death.<sup>6</sup> Therefore, a person's temporal existence starts before birth with conception. Which raises the question, is temporality the measure for when an individual's adventure begins? What should be the "clock" that measures human temporality? Romano suggests that events are not inscribed in time but open the *advenant* to temporality through events.<sup>7</sup> However, birth being a fact in time that cannot be reflected upon by the *advenant* as an eventual event or an event that upends the *advenant's* understanding of self, shapes Romano's understanding of birth as a "proto-event," an event that

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<sup>6</sup>See Chapter Two.

<sup>7</sup>Romano, *Event and World*, 46.

allows all other events to occur.<sup>8</sup> In other words, birth as temporal fact makes all future events possible for the *advenant*. Therefore, birth as a proto-event for Romano opens the *advenant* to temporality, allowing time to begin. Thus, temporality's beginning for an *advenant* is also the beginning of the *advenant's* adventure, which biologically begins with DNA's transmission.

If adventure begins at DNA's transmission, then what is the temporal "clock" or measure? For Romano, temporality is not linear but bursting forth from eventual events, which opens time to the *advenant*.<sup>9</sup> Therefore, temporality for a subject in Romano's phenomenology does not have a "clock" outside of eventual events. It is eventual events that measure time for Romano. Even though birth opens the possibility of temporality as a proto-event, it is not an eventual event that can be reflected upon since the person cannot remember their birth. Yet, in light of a genetic philosophy of time, temporality exceeds the reflected upon event to include time kept by our DNA, which would begin at conception, even though, the individual does not have cognition of it. This suggests that an individual's biological temporal "clock" begins at conception and is independent of human mental perception.<sup>10</sup>

However, the biological temporal "clock" that starts "ticking" at transmission of DNA is also a record of the past and a vehicle for future possibilities in the

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<sup>8</sup>Romano, *Event and World*, 101.

<sup>9</sup>Romano, *Event and World*, 46.

<sup>10</sup>See for information on in vivo circadian rhythms; Chengwei Li, Shuaug Yu, Xiaoling Zhong, Jianguo Wu, and Xiaodong Li, "Circadian Rhythms of Fetal Liver Transcription Persist in the Absence of Canonical Circadian Clock Gene Expression Rhythms *In Vivo*," *PLoS One* 7 no. 2 (2012). doi:10.1371/journal.pone.0030781.

individual, as seen in Chapter Two. This seems impossible. How can a “clock” that starts at conception also measure past or future possibilities? Romano’s understanding of birth as opening future possibilities, as well as opening the past to a history older than the individual’s history, aids in explaining how our DNA temporal “clock” functions. Birth exposes the advenant to an “immemorial history” of others that is older than the individual and brings with it the possibilities that history affords.<sup>11</sup> Transmission of DNA also exposes the individual to a concrete ancient history that is present in that individual’s DNA. This history that tangibly contributes to the becoming of that individual, and thus, opens him/her to the past that directly impacts the individual’s future possibilities through transmission of DNA and mutation.

### **Mutation and Event**

Mutation is the event that creates variability in the genome, and like Romano’s notions of event as either innerworldly or evential, where innerworldly events do not upend the world of the individual and evential events cause a new way of being-in-the-world, mutation at its occurrence can be either an innerworldly fact or an evential event. Similarly, mutation that initially appears as innerworldly event can actualize, becoming an evential event that upends being-in-the-world, contains possibility, and opens time through event. Thus, evential-mutation events can be viewed as facts that bring human life an excess of possibility. By examining the relationship of mutation to innerworldly event, actualization, and evential event,

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<sup>11</sup>Romano, *Event and World*, 75.

correlations and modifications will become apparent that facilitate a biological model of event and temporality.

Innerworldly event and mutation, which has no impact on the phenotype of the individual, exhibit similar characteristics. By utilizing Romano's innerworldly event's three features, mutation can also be seen as innerworldly event (innerworldly-mutation). According to Romano, innerworldly events first, are pure occurring; second, are bounded by pre-existing possibilities; and third, take meaning from the world in which they occur.

The first characteristic, pure occurring, illuminates the first disparity between event and mutation. As pure occurring, an innerworldly event does not have a privileged subject, while innerworldly-mutation does have a subject, the individual in which the mutation occurs. Mutation, either in the somatic cells or germ cells, arises in the DNA of a specific person, albeit randomly and in the case of innerworldly-mutation does not affect the individual's phenotype or life processes. Therefore, the individual is unaware of the genetic change to their genotype due to innerworldly-mutation. The mutation occurs without extemporaneous meaning, as if it never happened, which parallels innerworldly event that "*occur only of themselves and 'open' only to themselves . . .*"<sup>12</sup> Mutation may arise in a particular person, but because the change is imperceptible to the individual, it bestows no meaning except to the DNA, which undergoes a change. The individual may not perceive the innerworldly-mutation, but the DNA itself is altered and if the mutation

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<sup>12</sup>Romano, *Event and World*, 29.

occurs in the germ line and not repaired it can be passed on to the next generation. Thus, innerworldly-mutation follows Romano's definition of innerworldly event as pure occurring that shows itself in and of itself, something that just happens.

The second characteristic of innerworldly event as limited, pre-existing possibilities that do not change a subject's perception of themselves, at first glance seems consistent with mutation, since the individual is unaware of changes to their genome either in somatic or germ cells. It would seem that every occurrence of mutation finds the individual as pure spectator. However, there are genetic mutations that upon reflection will upend a person's being-in-the-world, such as a mutation that causes cancer. This is a mutation that arises in a somatic cell and cannot be passed on to the next generation. (The innerworldly-mutation that causes cancer actualizes the event from being innerworldly to eventual, which will be investigated later in this section.) Innerworldly-mutation does not reorder a person's world; it does not cause a reevaluation of self; and it does not necessarily open the person to the possibility of radical change. Innerworldly-mutation, like innerworldly fact, happens to an individual but does not cause the person to question their selfhood. Rather it establishes the conditions for the possibility of selfhood.

The third characteristic of innerworldly event, as taking meaning from the world in which they occur, flows from Romano's second assertion and logically makes sense for both innerworldly fact and innerworldly-mutation. If the event/mutation is limited to pre-existing possibilities and does not induce



immediate radical change, then the innerworldly event/mutation cannot generate meaning beyond the horizon of the world in which they occur. They do not evoke or create new meaning for the individual. The world in which innerworldly event/mutation occurs, the day-to-day phenomenological world or the cellular biological world, determines the meaning and significance of the innerworldly event/mutation. Therefore, innerworldly event and innerworldly-mutation frame the mundane inner working of the world in which they occur.

Neither innerworldly event nor innerworldly-mutation initially plays a role in defining human adventure, because they open only onto themselves, they do not cause the subject to reevaluate their life world, nor change the subject's mode of being. For the most part, innerworldly events and innerworldly-mutations are benign, occurring without notice or impact to the individual, but not all events or mutations go undetected. Some events and mutations significantly impact the subject's self-understanding and upend the person's being-in-the-world. Romano considers these events to be eventual events.

Eventual events share four characteristics; they have a determined assignation; they illuminate their own context; they contain their own possibilities; and they open time. All four of these characteristics can be applied to DNA mutations whose outcome affects the phenotype or life processes of the person in which the mutation occurred. Going back to the cancer example, when a mutation event causes a cancerous tumor, especially if the cancer is aggressive or terminal, then this type of mutation contains all the same aspects as an eventual event. (Note:

This type of mutation cannot be transferred to subsequent generations.) Other types of mutations, such as those causing birth defects or disease also meet the criteria for eventual event. Thus, they are eventual-mutations.

Eventual-mutations like eventual events have a determined subject, the person with cancer. The person upon reflection on the eventual-mutation event can ascribe meaning to the event. However, this reflection differs from the reflection seen in eventual events, described by Romano, because the subject may not be aware that a mutation caused the cancer or disease. Therefore, they are not reflecting on the mutation itself and cannot ascribe meaning directly to the eventual-mutation. They instead reflect upon the outcome of the eventual-mutation, the disease. In the subjects understanding, the outcome takes on the role of eventual event. Yet, the root cause, and thus the true eventual event, is the eventual-mutation.

Romano insists that eventual events are not about causes but impacts or how an eventual event changes the world of an individual,<sup>13</sup> and it would seem that eventual-mutation points to a cause. Yes, mutation is a cause; but like the lightning example from Chapter Three that caused a radical change in a person's being-in-the-world, the lightning strike is still the eventual event that upended the individual's life world. When the person reflects upon the lightning strike, they are reflecting upon the cause's impact. Similarly, when the person reflects upon their cancer caused by somatic genetic mutation, they are reflecting upon the cause's impact; the mutation's impact. Not being able to precisely pinpoint the cancer's cause does not

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<sup>13</sup>Romano, *Event and World*, 59-60.

lessen the cause's meaning, nor does it make the mutation event less significant. Biologically the mutation had to occur in order for the cancer to affect the individual. Just because the subject has no mental awareness of the mutation event does not imply that the genetic change is not an evential event. Evential event creates a new way of being-in-the-world of an individual and so too does evential-mutation. The world of the subject is reconfigured by the evential-mutation and thus, opens a horizon of meaning to the human adventure for that individual.

Evential event and evential-mutation not only open one to adventure, but it also opens time or temporalizes it by introducing a fissure between past and future that radically bursts open possibilities and introduces a new way of being-in-the-world. Both evential events and evential-mutations occur not in the present, but in the past, and only become evential after the individual reflects upon the event. Linear time radically changes for the person who now sees their life as before the event and after the event. The person sees their life as a series of events rather than a linear calendar.

The idea of a series of events as defining temporality over a linear calendar brings up an interesting development for evential-mutation and DNA, which seems to favor a linear understanding of time. However, even though mutations occur within a linear time frame, when a mutation event impacts the subject or species is not necessarily linear. For instance, three mutations occur over a period of three years, in the first year mutation "A" happens in a somatic cell, in the second year mutation "B" happens in a somatic cell, and in the third year mutation "C" happens

in a germ cell. Some period of time passes, let us say another three years and in that year mutation “B” affects the subject with mutation “A” impacting the subject the following year. Mutation “C” never affects the subject in which it arose but affects its progeny. Even though mutation “A” occurred first, it was not the first to create new meaning for the individual. The change to the DNA occurred linearly but the effect to the subject did not, because not all mutations actualize or transform from being an innerworldly-mutation to an eventual-mutation in a non-linear fashion and some may never actualize.

Romano explains that an innerworldly event can become an eventual event, which, when applied to genetic mutation, sheds light on the non-linear way mutation affects or does not affect a subject or a species. Looking back on the innerworldly-mutation, we see that at the time the germinal cell mutation “C” took place it had no impact on the individual’s phenotype, yet the unrepaired DNA remained. This mutated DNA initially does not change the moment-to-moment function of the person, but when an environmental variation is introduced, that mutation potentially acquires new significance for the offspring who may carry that mutation. This could be passed on through several generations before the mutation impacts the descendant. If the initial mutation occurs in a germinal cell,<sup>14</sup> the mutation can be passed on to the offspring and can actualize from an innerworldly-mutation to an eventual-mutation in any generation into the future, thus not

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<sup>14</sup>See Chapter Two.

affecting the individual in which the innerworldly-mutation occurs but opening future generations to the possibilities that the innerworldly-mutation may hold.

According to Romano, the actualization of an innerworldly event to an eventual event reconfigures the *advenant's* intrinsic possibilities, opening them to future possibilities, which we also observe with mutation. An innerworldly-mutation actualized in an individual opens that person to future possibilities, and also opens his/her descendants to future possibility. Thus, innerworldly-mutation potentially “future loads”<sup>15</sup> the species. Similarly, an innerworldly-mutation that is not actualized but inherited by future generations also potentially “future-loads” the species. In both cases, innerworldly mutation opens the species to future possibilities.

The future possibilities that DNA mutation opens to a subject extends beyond the individual to future generations. Which raises the question, is event phenomenology valid for understanding temporality as identified by a genetic philosophy of time? In other words, does genetics stretch event phenomenology outside its limits? For Romano, in his explication of event phenomenology, event applies to one person’s being-in-the-world, and how events affect that one person’s awareness of self. While genetic mutation can affect one person’s being-in-the-world, it also can extend to future generations in a very concrete manner, through altered DNA. Yet, when innerworldly-mutation actualizes, whether in the

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<sup>15</sup>Romano explains that “future-loading” in the possibilities that arise from an eventual event, which he calls “eventuality”. This future possibility comes without relation to the subject’s present. “This eventuality of the possible is what rebounds on me and is delivered from a future that exceeds my present . . .” Romano, *Event and World*, 85.

originating person or in subsequent generations, it affects that specific individual's life world. But how about genetic change that occurs gradually, seemingly without notice; how does this apply to event phenomenology? In the case of something that has a noticeable beneficial or harmful impact on a future descendant (e.g., immunity to a virus), then Romano's description of eventual events also holds true for mutation. However, in the case of something that develops over time and may not have one person who experiences a moment of radical change (e.g., increased brain capacity), then Romano's eventual event category as punctuated radical change does not work. The individual with the greater brain capacity may have a different life world from his/her neighbor, but it would be the life world he/she knows from birth. Yet, that individual's increased brain capacity forms the foundation of how he/she perceives their being-in-the-world and the higher functioning brain opens that person to radical potential that causes a fissure between past and future for the person and potentially the species. Therefore, Romano's event classifications need to be expanded for a genetic philosophy of time to include innerworldly-mutations that have a duration quality or existence and instantiation beyond its originator.

Because our DNA opens us to our distant past and future possibilities that reach beyond our life time, shaping what it means to be human in a life world, a third event category is needed in event phenomenology: "durational event." This classification would include the type of innerworldly-mutation actualization as seen above, but not limited to genetic actualization. It would allow for an event that happens in the past to impact someone in future in the same manner as eventual

events function for the individual, an event whose duration outlives the individual in which it occurs. Specifically, it would allow for the type of mutation/genotype that alters the function of DNA, initiating subtle yet profound changes to the being-in-the-world of a descendant.

A durational event truly introduces a fissure between past and future, from which an entirely new future opens as it opens the past for the individual and potentially the species. Durational event concretely places the individual in relation to its ancestral history, yet it is properly the history of the individual in which the innerworldly-mutation's actualization occurs. It is only through reflection on an individual's immemorial past that a durational event's radical impact upon one's life world and the life world of the species can be accurately understood. The radical upending of the being-in-the-world that durational event causes, creates new future possibilities, a new adventure opens for the advenant and possibly the species, because durational events tangibly connect past, present and future possibilities.

### **Temporal Being-In-The-World**

A temporal understanding of being-in-the-world that appropriates biology and phenomenology acknowledges the contribution of both our cognition and our DNA. Therefore, a comprehensive temporal model sees the fundamental importance of our genome, its history, current function, and future contribution to our own health and life and that of our descendants in how we understand our life world, alongside of the phenomenological events as described by Romano.

But what does comprehensive temporal being-in-the-world look like? First, it requires readjusting event categories to include transmission of DNA as advent, innerworldly-mutation, eventual-mutation, and durational event; and second, it requires recognizing DNA as our temporal “clock”.

The beginning of all human adventure starts with the DNA we inherit from our parents, which connects us concretely to our past and opens our future possibility. We would not have knowledge of the world around us if not for our DNA and the past mutations our DNA has undergone in order for our species to become what it is today, a thinking being that not only functions in this world but also manipulates this world to better accommodate us. Our temporal beginning or origin starts with the transmission of DNA from parent to offspring, opening us to our immemorial past, as well as, our future possibilities and the future possibilities of our species.

Through innerworldly-mutation (genotype) and innerworldly event (phenomenology), the mundane day-to-day facts take place, mostly going unnoticed. Our DNA in conjunction with our bodies, biochemistry, and the environment continue to function with no radical impact on our life world. These events and mutations occur without upending our understanding of self and pass silently from present to past. However, both innerworldly event and innerworldly-mutation can actualize, becoming life altering upon reflection. Therefore, it is from the future, reflecting on the past that the innerworldly event or innerworldly-mutation takes on an excess meaning. For innerworldly event and non-durational innerworldly-



mutations, the radical upending happens to the person to which the event or mutation occurs, causing the individual to identify life before and life after the event as changed.

The actualization of an event or mutation moves it out of the category of “innerworldly” and into the category of “eventual.” It is within the category of “evential” that we garner temporality, for we humans understand our lives through life world changing events, which also includes life changing alterations in gene expression, somatic mutations, and decoding of the genetic endowment of our forbearers. Evential event and evential-mutation through expression reconfigures the world of the person. The person understands themselves as temporal by marking these events as changing their life world.

However, evential events are mentally perceived by the individual as having a definite object that causes the event, while evential-mutations are not necessarily identified as the object that caused the event. Yet, because we are not brains without bodies, memory without DNA, the significance of evential-mutation necessitates recognition for its role in how we understand our temporality, how we understand our life world, and how we go about our day-to-day being.

Both evential event and evential-mutation opens time, creating a fissure between past, and future. However, eventual-mutation distinctly links us with the past, not only because in the present we are utilizing the information of our past but because we are potentially reflecting upon our ancestors’ past. Our ancestors’ past becomes part of our present and opens us to future possibility because our DNA is

either changed or subject to stochastic noise as part of the process of information retrieval that is the informational bridge between our genotypes stored information and our soma's decoded and instantiated information. The actualized change either positively or negatively affects the way we navigate our life world. Yet, this change does not only impact our future but potentially the future of the human species, by aiding or hindering how our species interacts with its environment, allowing humans to thrive or decline. Eventual-mutation reaches beyond event phenomenology to take into account how this change affects future generations, connecting them to the past and opening them to future possibility.

Genetic philosophy of time extends past the limit of event phenomenology to necessitate a new category, durational event. A durational event or durational-mutation occurs to an ancestor as innerworldly event or mutation, and is actualized in a future generation, albeit tacitly, bringing along all the possibility that it holds. This is not a radically interruptive change for the individual that occurs in an instant, but radically interruptive change that occurs gradually or subtly. However, when the human species reflects upon the durational event, we realize just how life altering the durational event has become and how the durational-mutation profoundly alters the being-in-the-world of subsequent generations. In turn, these events rupture linear time across generations, uniting the past with the present and opening the future possibilities. Durational event or durational-mutation form the way humanity understands itself as temporal extending beyond the individual.

Human temporality encompasses how we understand our being-in-the-world through event categories, but event categories, even though they form the foundation of how we comprehend our life world, do not provide a measure outside of the 24 hour linear mechanical clock. Romano suggests that humanity does not understand itself as linear, although events can often be placed on a calendar.<sup>16</sup> Which prompts the question, what is humanity's temporal measure or "clock"? If you take into consideration human biology and human cognition, then the answer is our DNA, and the information we decode from it in the form the biological mechanisms that regulate our own biological clocks. Our DNA, its associated biochemistry, and dependent cellular machinery track our temporality, keep our history, and open our future possibility.

Each nucleated cell in our body, including our brain, contains our temporal "clock" or how we measure temporality, but our DNA does not function alone. It acts in relation with the cellular apparatus, with the rest of the body, with the brain, and with the environment in which the person lives. DNA interacts with the whole person and their life world, rendering our DNA dependent on relationality. Thus, our temporality lies inside as well as outside of us.

### **Genetic-Event Temporality: Presence and Absence**

Genetic-event temporality moves from the mind, as seen in Augustine, into life, as biological and phenomenological, taking into account the complexity of our life world. The "clock" becomes our DNA/biology in combination with our life

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<sup>16</sup>Romano, *Event and World*, 49.

events, DNA-event<sup>17</sup> “clock”, which measures the mentally comprehensible and incomprehensible aspects of our being-in-the-world. The human temporal foundation takes on profound meaning that encompasses life as coded seen in genetics and life as eventual as seen in phenomenology.

Our DNA-event “clock” records our biological life as coded, accumulated, actualized, limited, and duration, while measuring our phenomenological life as eventual, advent, and understood. Our DNA code accumulates the information that allows us to be human and function in our world by limiting changes to our DNA and by actualizing present and past mutations. Temporality takes on a durational quality where code gets transferred from one generation to the next, which includes alterations. Yet, this does not occur in isolation but rather works in continuity within us and between us and our environment. Congruently, our eventual events mark our advent or beginning along with how we understand these events as radical interruptions that upend our being, causing a re-creation of self. Time becomes a complex understanding of eventuality within encounter. In other words, our DNA-event “clock” measures how we grasp our upended world, which has reconfigured our intrinsic possibilities through the interaction of our DNA, our mind, and our life world.

Temporality as genetic-event (biological-phenomenological) no longer represents the dichotomy between eternity and temporality of Augustine, but an

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<sup>17</sup>“DNA-event” represents all the biological and phenomenological underpinnings that contribute to our temporality and will be used as such from here on out.

amalgamation of embedded (the genetic code) and ecstatic (the phenomenological event), whole (the human in totality) and part (cognitive reaction), as well as, duration (DNA as a continuous record) and advent (beginning of possibility). The combination of life and event, seen in Romano's phenomenology, along with the alignment of code and actualization, seen in genetics, thrusts presence and absence out of the mind only and into the biological phenomenological life word that also includes the mind. Presence enfolds relationality that bursts forth revealing and embracing an upending of temporality, which becomes evident upon reflection. The source of the radicality is eventual mutation/event, which comes from our current or ancient past.

At long last, genetic-event temporality can thoughtfully address absence, which up until now the different components, genetics and phenomenology did not tackle due to the complex nature of absence. Augustine sees absence as a deficiency, our inability to know God, arising from the distension temporality causes and the antinomy between eternity and temporality. Absence for Augustine is darkness, an abyss that can only be crossed in death when the soul reunites with God. DNA-event "clock" suggests that unawareness does not equate deprivation due to perdurance of record and continuity. The DNA-event "clock" functions regardless of our knowledge of it, impacting how we understand and utilize time and how time is embedded into our genome. Hence, absence of knowledge is not an abyss but normalcy that in seeking opens possibility. This calls for a re-thinking regarding the Augustinian perception of God's absence as darkness. Instead, the genetic-event

model proposes absences as unawareness that contains potential, as meaning that endures in the absence of instantiation, packaged, and waiting with each passage to a new generation. In seeking, thinking, or examining, we can become aware of that which has always been present, yet beyond our comprehension.

### **Shape of Temporality**

The presence and absence analogy in genetic-event temporality functions without a temporal/eternal antinomy, without the mind/soul location, and without a metaphysics of transcendence or a transcendental epistemology. Instead, it is characterized by absent presence that the durational event typifies; an absence that is not completely absent as seen in reflection, the moment in time, the individual self, and the event. "Singing the psalm," as seen in Augustine, depends on having the genetically evolved vocal chords, muscle control, and brain capacity, along with cognitive anticipation and memory. It takes an evolved body and mind within a life world experience that espouses singing.

The genetic-event temporal model with DNA/biology-event as "clock" calls for a re-thinking of the Augustinian model of the presence and absence of God to include mind along with the biological and phenomenological life world. The final step in building the bridge between theology and genetics, entails applying the temporal model developed in this chapter to Augustine's theology as seen in Chapter One, opening a new thinking about the presence and absence of God.

## CHAPTER FIVE

### RE-THINKING THE PRESENCE AND ABSENCE OF GOD

Thus far, my dissertation unfolds in four chapters: (1) an examination of Augustine's notion of temporality as presence that provides a mirror for understanding God. This understanding of temporality supports an ontology of presence and an ultimately inadequate understanding of human consciousness, one which overlooks the complexity of being human; (2) a construction of a genetic philosophy of time that attends to how the body utilizes, records, and internalizes time, and applies this genetic temporality to presence and absence as code; (3) an overview of Romano's phenomenology of temporal consciousness as a heuristic device that focuses on how a person experiences and reacts to their life world through events, shifting the structure of present and absences to event rather than the immediate presence; (4) the formation of temporality as genetic-event, brings together genetic/biological time and phenomenology, and thereby providing a more adequate perception of temporality and a robust re-thinking of how temporal humanity comprehends God's presence and absence.

My overall argument is that an inter-disciplinary approach to temporality that combines biology and phenomenology allows for a dynamic description of how humans encounter time, and this new model can be applied to Augustine's fundamental insight that an adequate understanding of temporality is theologically

indispensable for describing knowledge of God, namely, how humans perceive God as present or absent in their day-to-day lives. This re-conceives Augustine's understanding of the presence and absence of God (the Christian message or fact) illuminated by a contemporary view of human temporal experience, realized in the genetic-event model established in Chapter Four (the contemporary situation or common human experience).<sup>1</sup> By critically correlating the outcome, a more holistic approach to temporality arises that recognizes the complexity of the human, and when utilized in theology, calls for a re-thinking of how humanity experiences God.

The task of this chapter is to bring the developed genetic-phenomenological analysis of time to bear on re-thinking its transformative role in understanding the experience of God as both presence and absence. I will do this in three steps: first, by demonstrating the corrective correlation of the genetic-phenomenological approach to Augustine's position, which represents a metaphysics of presence displayed in contrast to the temporal and the eternal; second, by establishing how my account of temporality functions in the theological application seen in Johannes Baptist Metz; and third, by proposing that the method developed in this dissertation also has application in the science religion dialogue.

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<sup>1</sup>See David Tracy, "The Task of Fundamental Theology," *The Journal of Religion*, vol. 54, no. 1 (1974): 13-34. Tracy points out that a fundamental theology brings together two sources Christian fact and common human experience. For Tracy, "That task [of fundamental theology] is the need to explicate a preconceptual dimension to our common shared experience that can legitimately be described as religious" (18). In this project, how humans experience time within their day-to-day lives is the "common human experience" source, while Augustine's insight of using temporality to gain knowledge of God draws on the "Christian fact" source. Tracy expands this notion of fundamental theology in his book *Blessed Rage for Order*, where he develops a revisionist model that promotes a more adequate theological understanding for the contemporary situation (23). Tracy, *Blessed Rage for Order* (Chicago: University of Chicago Press, 1996).



### Section One: A Corrective Correlation

This project affirms Augustine's insight but not his understanding of temporality, which nowadays is no longer sufficient due to scientific and phenomenological resources available to theology regarding the human person. Today's resources require a re-thinking of temporality and the fundamental theological implications that ensue. In order to offer a corrective correlation to Augustine, I will, first, look at Augustine's approach, and, second, look at two problematic issues in Augustine's philosophy of time, demonstrating how genetic-event temporality advances a more adequate notion of temporality.

First, Augustine's insight into using the conundrum of temporality as an analogical approach for contemplating the presence and absence of God takes into consideration the anthropological lens of our lived experience.<sup>2</sup> As humans, we can only gain knowledge of the Other in and through our own milieu, which includes temporality. Augustine recognizes this. Therefore, he reflects upon temporality, our common human condition, as a means to seek God. Augustine's approach also acknowledges that contemplating time reflects the qualities encountered in contemplating God, namely the inability to truly define time, which mirrors the incomprehensibility of God. Therefore, the only access humans have to any

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<sup>2</sup>Human insight is anthropocentric by nature. We can only think as a human now thinks because we are currently human of modern cognitive capacity. DNA is the shared building block of all living creatures even though each genome's informational code is distinct. Therefore, human DNA can be inserted into any other creature, as seen in the case of gene therapy. See <http://www.genetherapynet.com/viral-vectors.html>, accessed April 29, 2014; also see Karen F. Buckland and H. Bobby Gasper, "Gene and Cell Therapy for Children --- New Medicines, New Challenges?" *Advanced Drug Delivery Reviews*, accessed April 29, 2014, <http://dx.doi.org/10.1016/j.addr.2014.02.010>.

fragment of knowing God arises from our human context, which exists in temporality. Thus, Augustine's mode for examining God's presence and absence rightly addresses two important aspects; first, experience of God occurs in temporality and second, the conundrum of time reflects the conundrum of God's presence and absence. In contemplating God, especially the human experience of God's presence and absence, temporality becomes the key for Augustine and for this project.

Second, two problematic issues of Augustine's consideration of temporality that the genetic-event model overcomes are, first, the metaphysics of presence displayed in a contrast of the temporal and the eternal, and, second, the collapse of time into consciousness. The first issue, Augustine's metaphysics of presence preserves an onto-theo-logy that maintains a gulf between the temporal and the eternal that humanity cannot cross until death. The presence of God can never be much more than analogically experienced due to the gulf between the eternal and the temporal because God exists outside of time and humanity exists in temporality. This is not the case in the genetic-event model that turns to science and phenomenology, opposed to a metaphysic of presence. Genetic-event temporality utilizes the anthropocentric source; the human creature in their life world, to define time, opposed to a dichotomy entrenched in the act of creation. Because the genetic-event model does not function in an onto-theo-logy, it does not distinguish between eternity and temporality, and thus, does not create an insurmountable gulf. Instead, the genetic-phenomenological account of duration and advent is consistent

with, rather than in contrast to, eternity and temporality (God and creation). This avoids the problem of “being” or “existing” seen in Augustine and allows God’s presence to be authentic within human experience. This approach to temporality does not need the contrast with eternity, with that which is non-time, in order to preserve an effective sense of absence. Rather than creating what seems to become an impossible gulf to overcome between God and creation, this model of temporality provides a heuristic means for understanding the effectiveness of absence within the present, not the full scale denial of human temporality by placing absence outside of time altogether.

The second problematic issue arises from our approach to explain and move beyond Augustine’s ontology of presence. To overcome the gulf between eternity and temporality, Augustine collapses all time into a razor thin instant of the present. Past and future have no real existence in time and therefore, have no real bearing on the experience of God outside of human consciousness, which Augustine conceives through the unembodied language of soul. For Augustine, the mind or human consciousness exists in the eternal soul, dismissing any role the body may play in understanding temporality. Both the collapse of all time into the present and the move to disembodied human consciousness as the instance of presence alone are problematic in light of contemporary biology and event phenomenology. This calls for a re-thinking of temporality that precludes these issues and the genetic-event model provides that re-thinking.

The genetic-event model addresses Augustine's issues in three ways. First, genetic-event temporality does not need to overcome a gulf between eternity and temporality, and thus, does not need to unnaturally collapse time. It is not essential for time to exist only in the present, and through the lens of genetic/biological time this project demonstrates that presence exists in the past as record in DNA and contains actual potential in the future through the durational characteristics of innerworldly-mutation. Second, as creatures, we have temporal bodies that have a genuine role in how we experience time. This project establishes that temporality exceeds human consciousness to include DNA, biological processes, and life world events. How humans cognitively comprehend time is only one aspect of a larger dimension of time's existence. Encoding and advent focus on the symphonic nature of time, its complexity that encompasses past, present, and future potential, and its durational characteristics as opposed to a razor edge moment of the present. Third, the genetic-event model offers theology a more holistic template that is truly grounded in common human experience. This model takes into consideration mind/body, environment, day-to-day life events, as well as future species potential, without depending on a temporal/eternal antinomy, mind/soul location and metaphysics of transcendence or a transcendental epistemology. The genetic-event model moves away from knowing God through duality to knowledge of God through the holistic experience of being human. By examining all aspects of the human experience of temporality, a new robust assessment of common human experience arises in the genetic-event model and new questions arise about the nature of God.

If the genetic-event model provides a more adequate understanding of the common human experience of temporality, which this dissertation demonstrates, then the theological account of the presence and the absence of God must utilize this temporal hermeneutic. In this re-thinking of presence and absence, awareness becomes only a piece of the larger understanding that sees absence as unawareness opposed to a void. God remains present, with or without our cognition, not because God exists in the eternal present, but because human temporality is not solely dependent on human cognition. Instead, the presence and absence analogy relies on genetics, brain capacity, and eventfulness to understand God as present always, even in our unawareness. The durational event typifies an absent presence; an understanding that absence is not completely absent as seen in reflection, the moment in time, the individual self, and the event.

The genetic-event model also establishes that humanity cannot be separated from their history because past exists as part of our DNA, and durational event can occur in one generation but affect a different generation, causing an upending of one's future life world or species. How humanity experiences God's presence occurs not only in the immediate present, but also in the past, which cannot be separated from the "now" due to the continuity of our genetic lineage and the record of all changes written in it. Extracting the present from the past creates an artificial knowing of God that jettisons the past, simplifying human complexity and leaving us without the necessity of confronting the question, "which form of 'human being' contemplated God then, in relation to the form of 'human being' who contemplates

God now?" This accepts that eternity of God is not reflected in the eternity of human beings, who is in fact a species snapshot of the species of human who came before and the species of human who may come later. This takes us from a view of human beings as static and eternal to a view of humans as evolving, perhaps wholly into new species, each of which may bring a unique and distinct interiority (i.e., preverbal human's view of the supernatural and our view of the supernatural must be quite distinct) to the contemplation of God. Re-thinking the human encounter with God in the genetic-event model attends to our history, which is inseparable in our knowing and to our ongoing evolution. God's presence or how humanity experiences God's presence must include the distant past as well as the present. Durational event highlights the significance of the past as inseparable from the present, which breaks open meaning in the future.

Presence and absence in light of genetic-event temporality reaches beyond onto-theo-logy, while staying historically grounded. By utilizing genetics along with phenomenology to establish common human experience and pairing it with Augustine's method of using temporality in contemplating the presence and absence of God, this dissertation demonstrates a successful theological re-thinking of human comprehension of God's presence and absence. This fundamental theology establishes a different and more robust method from the classical reflection that Augustine offers to contemplate the presence and absence of God.

## Section Two: Theological Application

I claim that the genetic-event model of temporality more adequately represents common human experience and as such insists that theology take up this new method in re-thinking presence and absence of God. Yet, if this model truly represents common human experience, then it fundamentally changes how theology thinks about time within all theological applications. To envision how significant a role time plays in theology and to realize how the genetic-event model impacts theological thinking, I will turn to the theological thinking of Johannes Baptist Metz. In doing this, I will establish first that temporality is enmeshed in theology, that contemporary theology has unsuccessfully met the challenges and possibilities of biological time, and that the genetic-event model of temporality can move theological thinking forward without sacrificing the Christian fact or message.

Metz addresses time in Chapter 10 of *Faith in History and Society* as a way to recover Christian praxis or Christian imitation of Christ within the current culture or current time. Metz sees theology's problem as not truly understanding the importance of time and instead settling on a form of timelessness in its thinking, both in classical and contemporary concentrations on time. This timelessness is driven by theology "to regard itself as a kind of constant reflection that is institutionally protected and cannot be interrupted by imminent expectation . . ."<sup>3</sup> For Metz, systematic timelessness, viewing time as a continuous process moving

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<sup>3</sup>Johannes Baptist Metz, "Chapter Ten: Hope as Imminent Expectation," in *Faith in History and Society: Toward a Practical Fundamental Theology* (New York: Seabury Press, 1980), 177.

toward infinity, plagues theology through the modern world's myth of evolution that prevents Christians from living the gospel message.

Timelessness caused by humanity internalizing an empty indifferent representation of time, for Metz, finds its foundation in evolutionary time. This evolutionary schema of time comes out of the "cult of the makeable" that everything can be produced and replaced, resigning humanity to apathy and fatalism.<sup>4</sup> This, in turn, contributes to the moral unresponsiveness Metz sees in contemporary society. Metz points to humanity's desire to control nature through science and technology as guiding the cult of the makeable and constructing a new metaphysic in which time becomes indifferent. Metz turns to the apocalyptic, imminent doom pertaining to the end of the world as it now exists, as a more adequate representation of the interruptive and discontinuous nature of time that avoids the complacency of evolutionary time, as defined by Metz.<sup>5</sup> The apocalyptic notion of time calls one to action in imitation of Christ, something Metz sees evolutionary time as incapable of doing.<sup>6</sup> For Metz, evolutionary time born out of our current scientific technological culture precipitates unresponsiveness that pacifies and leads astray imminent expectation.<sup>7</sup>

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<sup>4</sup>Metz, "Chapter Ten," *Faith in History and Society*, 170.

<sup>5</sup>Metz, "Chapter Ten," *Faith in History and Society*, 172.

<sup>6</sup>Metz, "Chapter Ten," *Faith in History and Society*, 176.

<sup>7</sup>Metz, "Chapter Ten," *Faith in History and Society*, 177.



Metz's elucidation of time highlights the importance of temporality in theology. In this brief summary of Metz's thoughts, we see him attributing how Christians respond to the gospel message to how humanity internalizes time, namely evolutionary time. Metz's turn to the apocalyptic to recover time speaks volumes to the underpinnings of temporality in Christianity and to his dissatisfaction with classical as well as contemporary notions of temporality. The apocalyptic or end of time, according to Metz, is God in its delimitation, discontinuity, and possibility.<sup>8</sup> By reclaiming the apocalyptic as a corrective, Metz recaptures "imitation in imminent expectation" that accepts suffering in order to defy apathy and hatred.<sup>9</sup> For Metz, Christian thinking regarding time touches Christian praxis, Christology, and eschatology, and he calls into question the timelessness of time that is "firmly established in theology."<sup>10</sup> Metz demonstrates that temporality is firmly entrenched in Christian theology and is in need of re-thinking.

Metz takes up the apocalyptic to shake theology from the grip of timelessness caused by an evolutionary understanding of time. He states, "Any theology, however, which accepts the ideas of time that is current in an evolutionary view of history, in which time is seen as a continuous process, will lose everything else

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<sup>8</sup>Metz, "Chapter Ten," *Faith in History and Society*, 174.

<sup>9</sup>Metz, "Chapter Ten," *Faith in History and Society*, 176.

<sup>10</sup>Metz, "Chapter Ten," *Faith in History and Society*, 177.

(together with the idea of imminent expectation)."<sup>11</sup> He continues to explain that evolutionary time is "the rule of death over history . . . God---the God of the living and the dead, the God who does not let the past, the dead rest in peace--- is . . . unthinkable . . . a real absence of God."<sup>12</sup> Metz's elucidation seems to negate this project that turns towards science and evolution to address the Christian notion of temporality. However, I contend that the genetic-event model is not, as Metz defines, evolutionary time and does not succumb to timelessness that yields complacency. Instead, the genetic-event model overcomes this obstacle by actually examining the common human experience of time as biological and phenomenological.

Genetic-event temporality does not arise from the scientific and technological advancement that seeks to control or conquer our life world, but a realistic look at how humanity holistically comprehends time. In this model, time is not timelessness, but a physical record of the past in our DNA and in our memory as event; a means of keeping and ordering our day-to-day activities and comprehension of events beyond consciousness; and dynamically shapes our future because of the past and the present. Genetic-event temporality finds purchase not on humanity's cognitive desire for production, consumption, and reproduction of material goods but on humanity herself. It is not about replacing or disregarding the other but about how as temporal creatures we consciously and unconsciously

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<sup>11</sup>Metz, "Chapter Ten," *Faith in History and Society*, 173.

<sup>12</sup>Metz, "Chapter Ten," *Faith in History and Society*, 173.

live out time as a relational web between DNA, cell, body, environment, and life world. In genetic-event temporality, we see interdependence of lived life and time as past, present, and future possibility, not empty production.

Even though genetic-event temporality originates in evolutionary biology, it does not negate or suppress history but renders recent past, distant past, and deep past relevant today by exposing the results and records of actual past occurrences. The continuousness of evolution allows possibility for us today, as well as for our descendants, while heeding the importance of our evolutionary past. For Metz, evolutionary time equates human conscious complacency that does not take into account the significant contribution of the biological body or the process that made consciousness possible. If evolution truly is an empty process, then what does that say about *homo sapiens*? Genetic-event temporality demonstrates that there is a symphonic quality to time. Biological/evolutionary time is dynamic and encompasses complex processes that integrate past, present and future possibility, while phenomenological time incorporates how we respond to life world events in understanding ourselves and others. Genetic-event temporality functions within an interdependence between mind, body, environment, actions, and life world. Genetic-event temporality more adequately expresses the importance of history than the evolutionary model defined by Metz, understanding history as inseparable from us as humans.

The interdependence that the genetic-event model espouses awakens our consciousness to the importance of the other and our environment. This awakening

calls us to a new level of realization that we are not completely autonomous, but part of a community in relationship. Within Christian praxis, this new realization petitions the believer to imitate Christ who also experienced a temporal body. In imitating Christ, it takes a genetically evolved body, muscle control, and brain capacity, along with cognitive anticipation and memory. Without the current and deep historical past recorded in our memory of events and DNA, without the conscious and unconscious keeping of present time, and without future possibility, we could not take action.

Rather than making Christ an apocalyptic correction to a bland time of “more of the same,” the genetic-event model calls for a recognition that the Christ event is not an outside, or rupture, or an inbreaking to human temporality (again echoes of the eternity/temporality divide) but an event in time and from time. It incorporates the past as all genetic presence does and it anticipates a future or provides the ongoing platform for the future. The “dangerous memory”<sup>13</sup> is even more amplified in this model than in Metz’s apocalyptic model. The apocalyptic model functions nicely in rhetorical moments when memory needs to be radically recalled and the future is in question, but the price of this is a rupture in duration, a rupture in the subtle presence of God.

As creatures, we cannot escape our temporality; therefore, we can either embrace our temporality, as the genetic-event model does, or we can continue to

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<sup>13</sup>Metz, “Chapter Ten,” *Faith in History and Society*, 171; Metz sees the “dangerous memory” as saving the Christian continuum from evolutionary time through the interruption of remembering what has been destroyed or lost and not the victory.

disregard it, as often occurs in theology. By embracing our temporality, including the science and the phenomenology that illuminate our current knowledge, it will theologially open up possibility for how we think about God, including God's presence and absence. For genetic-event temporality is characterized by absent presence that the durational event typifies; an absence that is not completely absent as seen in reflection, the moment in time, the individual self, and the event. It is not one over the other or despite the other but together in comprehending our temporality as a mirror to how we know and experience God.

### **Section Three: Science and Religion**

Although the primary focus of this dissertation has not been the science religion debate, it has demonstrated that science and theology can have productive dialogue by providing, in this case, a more adequate understanding of temporality in re-thinking how humans experience God's presence and absence.

This project not only redefines common human temporal experience but it also moves the science and religion interaction forward. Ian Barbour describes a version of science integration into religion that best describes my project. He states, "In a theology of nature, the main sources of theology lie outside science, but scientific theories may strongly affect the reformulation of certain doctrines, particularly the doctrines of creation and human nature."<sup>14</sup> This project typifies this by bringing together the genetic/biological understanding of time, phenomenology, and Augustine's insights in seeking knowledge of God. By turning toward the

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<sup>14</sup>Ian G. Barbor, *When Science Meets Religion* (New York: HarperCollins, 2000), 27-28.

disciplines that study the human person, this project aids theology by offering a re-thinking of the doctrine of God and demonstrating that scientific knowledge has a place within theology.

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