

The Curiosity Project

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## The Curiosity Project

### *Introduction*

On Monday morning, May 22, 2017, I got in my car and left Fayetteville, North Carolina to begin a summer job. Before that morning, I had never driven more than 3-4 hours by myself and never more than six hours at once. Two hours into the drive, I found myself on familiar roads yawning. I only had 38 more hours left.

Over the next four days, I made my way to Couer d'Alene, Idaho, where I would be spending my summer as a habitat and population biology intern for the Idaho Department of Fish and Game. After passing through beautiful storms in Kansas, visiting close friends in Colorado, and sleeping behind a Cabela's in Montana, I began the final stretch of road leading into Idaho. I crossed the Rockies, admiring freight trains as they plodded along underneath towering hillsides. As I entered the mountains, rocky rivers appeared alongside tall wooden bridges. Finally, I approached my destination, Coeur d'Alene, Idaho. I was welcomed by the wonderful view of a large, greenish-blue lake that the high, curvy road afforded me. I drove into the parking lot of the Panhandle Region office of the Idaho Department of Fish and Game, walked into the office, and was greeted by a biologist, my supervisor for the summer. I began the summer expecting to experience the mountains of Idaho and get training in wildlife management. While both of these were met, an unanticipated idea developed in my mind during my next two months.

During the two years before I worked in Idaho, my freshman and sophomore years of college, my personal curiosity and wonder were being greatly fed. I was very curious as a child, and as I entered college, I was exposed to the world of academics. I had at my fingertips an incredible amount of new ideas and teaching, and nearly everything fascinated me—I was hungry to learn. However, despite the curiosity and wonder at work in my life, I did not clearly

understand the role they played in how I viewed and interacted with the world. This began to change during my time in Idaho when I read *The Wild Places*, a book by Robert McFarland in which he explores and documents some of the last remaining wildernesses of the British Isles. After comparing his own recent experience upon a rugged, snow-covered peak to that of his daughter as she contentedly explored their small city backyard, McFarland reflected: “There was as much to be learned in an acre of woodland on a city’s fringe as on the shattered summit of Ben Hope: this was what Roger had taught me – and what Lily did not yet need to be taught. It was something most people forgot as they grew into adults.” After reading this, I began to wonder why people tend to lose their curiosity and wonder as they grow older and if that loss could be prevented. Though they didn’t happen as written, the following conversations were created based of thought-conversations with myself, actual dialogue with other people, and real experiences from Idaho. They were written to represent some of the ways my thoughts on curiosity and wonder have evolved since my Idahoan summer.

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*Dialogue One: Thinking About Where Curiosity and Wonder Come From*

Over the course of the summer, I spent most of my days assisting a senior field technician or biologist. The majority of these days involved a long car ride to our field site and a large amount of hiking. Opportunity for conversation abounded with everyone I worked with, but one technician, Steve, was especially quick to pose an interesting or complex question. Steve was in his 60’s and had already retired once from a job in Michigan. He and his wife moved to a comfortable mountain home in northern Idaho, and Steve eventually began to work for the Idaho Department of Fish and Game, mostly as a way to feed his interest in wildlife.

One morning, as we were hiking into a valley to set up a trail camera, Steve asked me, “Have you ever wondered why nature is so beautiful?”

I glanced around the trail we were on. On the left, the ground fell quickly into a deep, green valley, and on our right the snow-covered mountaintop glistened as it melted in the hot sun.

“Well, it probably depends on why we think anything is beautiful,” I said. “I mean, why do we like music and art, and all sorts of things?”

“Sure. I think you’re right, but what is it about nature—and music and art for that matter—that makes it feel so good to look at?”

“Do you mean, why does our brain enjoy seeing them?”

Steve said, “In a way,” and then paused for a moment. He was looking out over the valley as we continued to walk. Then he said, “I’m wondering about something deeper than just the little neurons bouncing around in the brain saying, ‘Look at this! Isn’t this nice?’ Why do beautiful things appear beautiful in the first place? I’ve always felt that there’s something much more to it than us. Don’t you think?”

“I suppose so,” I said, though I was still confused.

Soon, we started down a snowy slope, vaguely following a trail. After a few minutes, I said, “OK, so there’s something about nature—or whatever you really love—that seems amazing and more than just a plain, boring observation.”

“I agree,” Steve said. “Why do you think those things seem special to them? And I mean specifically.”

“I’ve always thought it depends on what people get exposed to when they’re young, or what we have positive reactions to.”

“And what would make them have a positive reaction?”

“They probably experienced something good with it. Though, you’re going to ask where those came from.”

Steve chuckled, “Yes, I would ask that.”

I asked him, “So, what’s your point then? All those different things that need to happen, aren’t they all still happening in the brain?”

“I guess they have to be,” Steve said. “But I’m not convinced that means it had to start there.”

“Where else would it start?”

“I don’t know. But I’ve always wondered if, when we try to figure out where something came from, if we’re thinking in a circle, and there’s actually something else at work”

I responded, “As in a soul or something that’s the ultimate control?”

“Sure...” he said, “something like that. Just something *more* than the neurons and chemicals. A lot of people think that all the chemicals are what drive our thinking, but I think we don’t really know what drives curiosity, and I think—actually, have you ever read about phenomenology?”

“I’ve heard the term before, but I don’t remember what it is.”

“Okay, so a branch of philosophy—I was a philosophy major when I went to college, along with anthropology—phenomenology is the study of human consciousness, but it’s kind of an introspective, self-reflective approach. Think of us collecting wildlife data to understand wildlife versus someone who’s spent so much time outside that they just intuitively understand some of the things researchers want to know. Phenomenology is kind of like that for psychology. Instead of a lot of experiments, it involves a lot of self-awareness and review of yourself.”

I nodded.

“Well, with phenomenology, you can think about things like this without being constrained to the biology of the brain.”

I asked Steve, “That sounds interesting, but is it really that helpful?”

“That’s hard to say. I think it is. It’s easy to think we know a lot about how things work. But I think, especially when it comes to our mind and things like beauty and curiosity, we don’t understand much at all. Phenomenology lets us take a step back and really think outside the box.”

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### *Understanding Curiosity in the Mind*

In stark contrast to phenomenology, curiosity has been increasingly studied from a strict neuropsychological perspective. Meanwhile, wonder, more closely aligned with the beauty of nature which Steve described, is mainly approached philosophically. Curiosity, in its broadest sense, has been described as an active search for new experiences and knowledge. This is distinctly different from wonder, which is generally categorized as a reaction to novelty. Curiosity motivates pursuit of something which can cause wonder. Within the mind, the theorized mechanisms driving curiosity have been long debated. Some researchers distinguish between curiosity as a whole and the correlated chemical brain processes, but most investigate how different neural processes, like dopamine release, influence curiosity.

Historically, there have been two overarching methods with which to approach curiosity, one of negative affectivity and one of positive affectivity. Each of these perspectives views the information-seeking behavior of curiosity as a reaction to a mental state. With negative affectivity, curiosity causes movement away from harmful states such as ignorance, and with

positive affectivity, curiosity causes movement toward things which bring about a rewarding state. In other words, negative affectivity relates to a defensive action while positive affectivity relates to an open, accepting behavior.

Negative affectivity suggests that acquiring new experiences or knowledge dispels an undesirable ignorance<sup>1</sup>. Such a state could be reasoned to be self-endangering because ignorance of dangerous stimuli can be life-threatening. Thus, evolutionarily, curiosity may have developed alongside memory. While our memory stored information that promoted human survival<sup>2</sup>, our curiosity helped us recognize times of ignorance and consequently obtain new information.

With negative affectivity, uncertainty associated with new stimuli leads to an unpleasant state. And so, in the presence of new experiences or knowledge, an individual is driven to reduce their uncertainty, so restoring a pleasant state. Daniel Berlyne, a 20<sup>th</sup> century psychologist and philosopher, carried out multiple experiments investigating the negative affectivity nature of curiosity. In one experiment, he presented subjects with sets of two visual figures, one of which was more visually complicated. He found that for all pairs of figures, subjects' eyes targeted the more complex figure significantly more<sup>3</sup>. In another experiment, Berlyne presented subjects with obscured visual figures which they were able to view, repeatedly if they chose, for very short periods of time. He found that as visual unexpectedness and confusion increased, subjects viewed the figures more times<sup>4</sup>. Berlyne's results may not seem surprising—it makes sense to spend more time looking at something more complicated—but they showed the foundation of curiosity: sustained attention to new stimuli or experiences. When it encounters something new, the mind suddenly recognizes that it does not understand the entire situation. This is called a perceived information gap. Generally, a very large information gap (e.g., outright confusion) is connected to a low level of curiosity. However, as the information gap starts to close, curiosity



increases. This is why people often experience intense curiosity when they cannot remember something on the tip of their tongue, but much less curiosity when they cannot remember something at all. George Loewenstein, well-known for research in decision-making and human economic behavior, thinks curiosity works this way for our benefit, because it is most efficient to pursue information when it is most closely within arm's reach<sup>5,6</sup>. Thus, curiosity helps us escape a distinct lack of understanding, which has potential to harm us, but creating a desire for the most readily available information.

The second overarching approach to curiosity views it through a lens of positive affectivity. While negative affectivity is about escaping a potentially harmful state, positive affectivity is about pursuing a potentially beneficial state. While each of these results in increasing our level of knowledge, they are distinguished by their motivations. Consider three generalized states: harmful, neutral, and beneficial. Negative affectivity is associated with a defensive movement from a harmful state to a neutral state, thus making it a defensive action. Meanwhile, positive affectivity is associated with movement from a neutral state to a beneficial state, not associated with eliminating danger, but simply gaining additional benefit. Further, positive affectivity suggests that process of acquiring new experiences or knowledge is itself rewarding and pleasurable<sup>7</sup>.

Positive affectivity theory address one problem of negative affectivity theory: if curiosity is a defensive behavior which initiates understanding of a mysterious stimuli, how can people appear curious in the absence of novelty? According to positive affectivity theory, information-seeking behavior is pleasurable, so there is motivation to pursue it even in the absence of immediate stimuli. This is part of boredom: desire for the pleasure of curiosity, but nothing to fill it. However, positive affectivity theory brings along its own problem. If it is the feeling of

curiosity itself that is pleasurable, would it not be more logical to remain in ignorance, searching for more things to understand rather than actually searching for answers?

To answer this question, we can learn from Jordan Litman, a psychologist who studies curiosity at the Institute for Human and Machine Cognition in Florida. Litman views curiosity as a combination of feelings of interest (positive affectivity), which are associated with the pleasure of learning new ideas, and feelings of deprivation (negative affectivity), which emphasize finding practical solutions to specific problems<sup>8</sup>. Similar to Litman's interest and deprivation, which are connected but distinct, are two neural processes of reward-induced action, wanting and liking. As brain processes, wanting refers to the drive to pursue a reward<sup>9</sup>, while liking refers to the reaction to an obtained reward<sup>10</sup>. Because these two processes are separated in the mind, it is possible to want something that isn't liked or to like something which isn't wanted. For example, when dopamine, which controls intensity of wanting, is removed from mice, they cease pursuing food rewards but continue to show liking for food given to them<sup>11</sup>. Similarly, mice with hyper-induced dopamine levels will pursue something which they do not like. Wanting is connected to deprivation (e.g., you feel deprived when you don't have something you want, or in this case, something your brain chemically needs), and liking is connecting to interest (e.g., you have interest in something once you find that you like it). Thus, curiosity is a blend of both interest and deprivation, which are connected but separate functions.

Viewed this way, curiosity is a matrix of wanting and liking (i.e., deprivation/liking), involving four broad categories (Table 1): low-level wanting/low-level liking, low-level wanting/high-level liking, high-level wanting/low-level liking, and high-level wanting/high-level liking<sup>5</sup>. Low-level wanting/low-level liking is characterized by general ambivalence or boredom in the presence of new stimuli. Low-level wanting/high-level liking is similar to curiosity as a

feeling of interest. This category is characterized by awe, aesthetic appreciation, and unnecessary exploratory behavior. Traditional curiosity, spontaneous and enjoyable information-seeking, finds its home here. High-level wanting/low-level liking is associated with cognitive closure and morbid curiosity, which is curiosity about things that are unpleasant or even disgusting in nature (e.g., the desire to view a car accident or an injury). Finally, high-level wanting/high-level liking is similar to curiosity as a feeling of deprivation. This category is characterized by an intense desire to acquire relevant information. It can be compared to the longing of a nutrient-deprived person seeking a substantive meal, the reward of which is both pleasurable and very much necessary.

**Table 1.** Four categories of curiosity based of low- and high-level wanting and liking.

	<i>Low-Level Wanting</i>	<i>High-Level Wanting</i>
<i>Low-Level Liking</i>	<b>Ambivalence Boredom</b>	<b>Cognitive Closure Morbid Curiosity</b>
<i>High-Level Liking</i>	<b>Traditional Curiosity Awe</b>	<b>Intense Craving</b>

Whether Litman's theory is correct or not, it represents the modern approach to understanding curiosity, blending both the neurological mechanisms of wanting and liking and the psychological theories of positive and negative affectivity. In the past century, research in curiosity has become more scientifically rigid, relegating more abstract and phenomenological thought to the study of wonder. This is an important distinction to recognize. Scientific research separates these two traits, primarily focusing on curiosity, but the majority of popular literature approaches them together, and because of this, many popular definitions of curiosity overlap

with definitions of wonder. As a result, scientific research often attempts to describe wonder-like aspects of curiosity without recognizing wonder as its own entity. For example, Litman describes his traditional curiosity—a combination of high-level liking and low-level wanting—as spontaneous, reactionary, and often relating to joy and pleasure. This curiosity is distinctly different from the typical information-seeking behavior often described, and instead bears significant similarity to accounts of wonder.

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*Dialogue Two: Thinking About Curiosity and Wonder at Work in Our Lives*

On Friday, July 14<sup>th</sup>, Steve and I started our last day of setting bear bait stations. For five days, we had been staying at the Priest Lake Ranger Station working throughout the southern Selkirk Mountains, setting up barbed wire and lure stations in attempt to snag tufts of bear fur.

We only had one station to set up and one to tear down on Friday, but they were both a far drive and hike away. After an hour, we had driven south to the lower end of Priest Lake, returned north again on the east side, and begun the slow drive up toward Abandon Mountain, weaving back and forth along the rocky forest roads. The sun had just begun to shine over the mountain tops, when Steve asked me, “Tell me Daniel, what’s your ideal environment?”

I looked over at him. “Environment? As in, what’s my favorite ecosystem or landscape?”

He let out a half laugh, “No. I meant—well, actually I’d like to know that too, but I want to know, what’s a place where you’ve been or you can imagine where you feel completely at peace and in awe?”

Wanting to buy myself some time to think, I said, “Well, I’ll start with the ecosystem—I think rainforests are incredible. I just love the idea of green everywhere and of twisting branches

and vines. And I think epiphytes are beautiful and really interesting, the way they grow on trees and catch rain water. There's even a salamander that only lives inside epiphytes on a single volcano down in Nicaragua!"

"Really? Wow." Steve seemed delighted by that fact, and over the next several minutes, we talked about rainforests and salamanders. I shared memories from a trip to Nicaragua and he shared stories of finding salamanders during family trips to the Great Smoky Mountains.

Before long, Steve continued on, "What about that second question? What's a place with peace and awe for you, or maybe it's just rainforests. Have you ever experienced that?"

"Yeah, I have, and I think it would actually be from this summer. Do you know where Harrison Lake is?"

"I do, I've been there a few times."

"And what about Harrison Peak, just beside it?"

"I haven't been there, but I've seen it from the lake."

Over the next few minutes, I told Steve about hiking up to the base of Harrison Peak, scrambling to the top, and friction climbing along a steep mountain ledge. Eventually, I had reached a point where I could look out over the whole landscape, the lake on the left side of the ridge and miles of forests and mountains to the right. Standing there, in the wind, and being able to see far below me the same trees I had walked underneath was incredible. All around me was a great expanse of sky and mountain, and I felt uniquely small compared to all of it.

"Wow. What a moment. That sounds wonderful. I can picture you up there looking out over everything—I mean, from the perspective of someone down at the lake."

"It was really like you said, kind of a surreal moment, where I felt like I could have just stood up there forever."

Steve didn't respond to this, and so I asked him, "What would your moment be?"

He breathed deeply, then smiled slightly, and said, "Well, it's this. This moment right now. That's what made me think to ask you for yours."

I looked out my open window. The cool mountain air was refreshing, and as I enjoyed a deep breath I noticed again the noisy silence always heard in mountain mornings like these.

"Feel that?" Steve asked.

I wondered if he was referring to the morning breeze, but before I could ask, he continued, "Sunshine like this—I can't help but take a deep breath and just enjoy it. It's as if it puts everything else on hold, and it makes me feel so at peace." He took another deep breath and said quietly, "It's so wonderful."

"I can't disagree!" I said. "It's a beautiful morning, with the sun and the breeze, the smell of the trees, even the sounds are peaceful."

Steve pulled up next to a log along the far side of a bend in the road and parked the truck. "Here!" he exclaimed. We hopped out and started getting our backpacks ready.

"There's nothing quite like these mountains." I said.

"They're spectacular all right, but while I know what you mean, in a sense, these mountains are quite a bit like countless other places."

I asked him what he meant by this.

"Well, I think there's really two ways to look at it. On the one hand, there isn't any other mountain—not a single one anywhere in the world—that looks quite like this one." He pointed down the trail we were about to start walking, "Nowhere else will you see the things you'll see here, like the specific arrangement of moss on this log. What we're about to see, we'll never see anywhere else. Even if we came back here tomorrow, it wouldn't be quite the same." Steve

paused for a moment as we began walking the trail. “On the other hand,” he continued, “think about the bigger picture. What makes this place so beautiful? For me, it’s the sun, the breeze in the trees. I can find those things anywhere.”

I replied, “That makes sense, but to me, it seems that if you have something unique, that’s a whole lot more special than the common things. Like Harrison Peak! I could never have experienced that in North Carolina.”

“Are you sure?” Steve asked. “Maybe you couldn’t see the same view, but I think the ordinary things can feel just as special.”

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### *Understanding Wonder and its Function*

Curiosity is often linked to wonder, each generally used to describe individuals who enjoy learning and delight in novel information and experiences. However, as shown, psychologists and neuroscientists generally restrict definitions of curiosity to purely information-seeking behaviors and within-the-brain processes. In contrast, wonder has received far less attention and is more vaguely and broadly understood. Wonder, occurring in reaction to experiences, is often associated with abstract concepts, emotions, and spirituality. Because of this, most research on wonder has been philosophical and reflective in nature.

What does it mean to wonder, to be a wonderer, and to live a wonder-filled life? Wonder as a noun is defined by the Oxford Dictionary as “a feeling of amazement and admiration, caused by something beautiful, remarkable, or unfamiliar.”<sup>12</sup> While there are various other uses for the word *wonder*, some very similar and some with different connotations, this project is concerned with wonder as a state of being inextricably linked to amazement, marveling, and awe. Perhaps the best brief example of this wonder is the image of childlike wonder. Childlike wonder,

associated by many with “true wonder,” is characterized by a humble openness to novelty and a distinct aptitude for being captivated with seemingly simple phenomena. However, to truly understand wonder, we must see wonder as it is at work in the lives of people.

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*A Life of Wonder: Rachel Carson*

Rachel Carson, renowned environmental champion of the 20<sup>th</sup> century, was a knowledgeable and well-trained marine biologist, but she was primarily concerned with communicating a way to *experience* nature, rather than teaching strictly *about* nature. “Wonder and awe were, for her, the highest emotions.”<sup>13</sup> Carson’s personal life and professional accomplishments were centered around practicing and cultivating a deep reverence for nature, essentially arriving at an ethics of appreciation<sup>14</sup>. She believed that lack of a foundational admiration and respect for life, human and non-human, caused many of the societal problems and moral disruption so prevalent. Thus, the assimilation of wonder into our lives would naturally create a natural outflow of morally acceptable conduct.

For Carson, wonder was inextricably linked to a grateful appreciation of the natural world. As she wrote about marine biology, she didn’t want her readers to just know about the sea, but she wanted to instill an entire perspective from which to view the sea, one characterized by deep reverence for it as an entity and a sense of its wonder and beauty. It was her personal philosophy that such a perspective would naturally produce a desire to understand the sea, to value it, and ultimately, to protect it. In essence, she believed that instead of teaching a person information about something, educators should teach a person how to recognize wonder and beauty, thereby empowering them to seek understanding and develop a personal sense of



stewardship. Only with a sense of wonder would a conservation movement be successful: “Once the emotions have been aroused—a sense of the beautiful, the excitement of the new and the unknown, a feeling of sympathy, pity, admiration or love—then we wish for knowledge about the object of our emotional response. Once found, it has lasting meaning.”<sup>15</sup> Carson believed that without an emotional attachment to the object of our focus, sustainable passion and care for it would be impossible. This is remarkably similar to a creed of French poet, novelist, and Nobel Prize winner Anatole France, that “the whole art of teaching is only the art of awakening the natural curiosity of young minds for the purpose of satisfying it afterwards.”<sup>16</sup> Carson, herself a conservationist and environmental educator, used her ethic of appreciation to promote protection of natural resources. Her motivating belief was that “the more clearly we can focus our attention on the wonders and realities of the universe about us, the less tastes we shall have for destruction.”<sup>17</sup>

Carson’s career, highlighted by *Silent Spring*, a book which spurred a national reversal in pesticide policy, has successfully championed for conservation and stewardship of natural resources. In large part, her success resulted from her passion to imprint her readers with a sense of wonder, something which was a natural overflow of her personal life. One of the clearest pictures of her wonder-filled life is seen in her 1956 work *Help Your Child to Wonder*, an article in which she discusses wonder, the importance of raising children who wonder, and how that might be done. Carson, who never married or had children, took over the care of her grandnephew Roger when her niece died abruptly. Carson and her grandnephew spent the school year in Maryland, but during the summers, they fled together to the rural coast of Maine. In *Help Your Child to Wonder*, Carson frequently references the intimate time she spent with Roger, fondly describing watching his growing enchantment with the natural world. During a rainy walk

through the woods, Carson recalls that after stumbling upon a large area of moss, “Roger delighted in its texture, getting down on chubby knees to feel it, and running from one patch to another to jump up and down in the deep, resilient carpet with squeals of pleasure.”<sup>15</sup> Carson recounts many more experiences like these, in each watching Roger as he played, delighted, and accepted the nature around him. Carson of course held a deep ecological understanding of their environment, but in all her interactions with Roger, she never thought it necessary to communicate this to Roger. “I have made no conscious effort to name plants or animals nor to explain to him, but have just expressed my own pleasure in what we see, calling his attention to this or that but only as I would share discoveries with an older person.”<sup>15</sup> As Carson walked along with Roger each summer, she allowed her wonder to overflow, naturally accommodating and enticing the wonder already in him. The best evidence for the fullness of her wonder is the way in which she was raised Roger, encouraging his own wonder, sharing her own personal delights, always demonstrating the joy, appreciation, and admiration in life which she wished upon Roger. Carson, greatly successful publicly, was as much a champion for wonder in the intimate relationship between herself and Roger. Beyond her desire to preserve natural ecosystems, Carson steadfastly believed that wonder, among our most valuable resources, must be earnestly protected.

A child’s world is fresh and new and beautiful, full of wonder and excitement. It is our misfortune that for most of us that clear-eyed vision, that true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood. If I had influence with the good fairy who is supposed to preside over the christening of all children, I should ask that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life, as an unfailing antidote against the

boredom and disenchantments of later years, the sterile preoccupation with things that are artificial, the alienation from the sources of our strength.<sup>15</sup>

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*A Life of Wonder: Bernard Berenson*

Bernard Berenson was a Renaissance art historian who became well-known around the turn of the 19<sup>th</sup> century. Berenson was born in the aristocratic society of present-day Lithuania but immigrated to Boston when he was 10. Berenson was his parents' first child, and because of their expectation and his two immigrations, Berenson developed an incredible desire for success and standing. Desiring to create his own name in society and fearing being the lesser in meeting someone new, Berenson worked hard for success, excelling academically and graduating from Harvard. During his time there, he studied under Charles Norton, hailed as the "most cultivated man in America,"<sup>17</sup> and tutored his peers, including George Santayana, who himself would later become a notable philosopher and poet remembered for his aphorisms.

Despite involvement in universities and religion, Berenson held a strong dislike for institutions. He believed that institutions were propagated through individuals, and as such, grew and worked as animals—working for their own advantages, hopes, appetites, and lust for power. "They end therefore by subjecting everything to a common average, distorting and even falsifying the ideals they were to serve."<sup>18</sup> He nonetheless acknowledged a necessity for institutions, such as the Church. He enjoyed the Church, but only as a graduate fondly remembers and watches his home university. A Jew, then a Christian, then a Catholic, Berenson titled himself a graduate of religion—he had experienced it, participated in many, but ultimately matured past any specific set of beliefs. As such, he held allegiance to none, but himself freely

enjoyed all forms of religious expression: “I should be glad of heart to join in any worship, to partake of any sacrament whether Christian, Jewish, or Moslem, Buddhist, Taoist, or Shintoist, if I did not fear that thereby I was supposed to accept the literalness of their myths and the actuality of their dogmas.”<sup>18</sup> With an open mind, Berenson didn’t believe any institution, creed, or set of ideals was worthy of singular devotion.

Instead, Berenson dedicated his life to something he called IT. IT involved a divine-like reverence for and intimacy with life itself and was by Berenson’s description, “every experience that is ultimate, valued for its own sake.” Berenson first encountered IT as a child, though he “did not call it by that name,” for in that moment of ITness, “[He] had no need for words. It and [he] were one.” Berenson recalls:

Was I five or six? Certainly not seven. It was a morning in early summer. A silver haze shimmered and trembled over the lime trees. The air was laden with their fragrance. The temperature was like a caress. I remember—I need not recall—that I climbed up a tree stump and felt suddenly immersed in ITness.<sup>18</sup>

IT was a thoroughly wonder-filled moment of enlightenment in which he felt oneness with the world, free to exist in peaceful harmony, neither giving nor taking, but experiencing.

Berenson’s experience on that cool, foggy morning was so transformational that it continued to impact the rest of his life. IT became his religion in that IT was what he searched for, desired to experience, and set his hope upon. As an old man, Berenson reflected and remembered that intimate childhood experience with ITness: “This experience has furnished me with a touchstone. It has remained for seven decades as the goal of my yearning, my longing, my desire. . . IT was my only real happiness.” IT was an experience greater than oneself, an intimacy

with existence itself, and a profound acceptance of “what is as if what is were a work of art in which the qualities so outweighed the faults that these could be ignored.” And so, since the age of about six, Berenson lived with ITness in mind, acutely aware of and in love with life itself.

As a child and young man, Berenson relished life in a magical universe where nearly “everything that meant anything was IT.” This life in paradise continued well into his late twenties, but his harmony with IT was slowly chiseled away. Eventually, Berenson found himself in a world where people neither knew nor remembered IT, and he joined a society of individuals “so preoccupied with the next that they found no time to feel how much they were enjoying the passing moment.” Berenson had fallen to an adulthood empty of wonder, empty of loving life for its own sake. “I could not resist the contagion,” commented Berenson, “although often enough, and at the most inopportune moments, I would get a sudden chill at my heart and say, ‘This is not IT.’”

For his next thirty years, Berenson wandered through his later life, seeking fame and status in his work. He fully achieved this goal, and as an art historian, he became so well-known and respected that his remarks substantially raised and lowered the value of renowned art pieces. However, with each addition to his professional success and wealth, Berenson traveled further in a wilderness with only infrequent oases of wonder. As he became an old man, Berenson was tired, “all ambition spent and passion whether of sense, heart or mind stilled.” Finally, he returned to his long-lost IT, “not merely to take it up where [he] had left it but with an awareness, an understanding, a wonder, a gratitude, a joy that one could not have experienced young when one took as a matter of course what one found at hand when roused to consciousness.” In the third part of Berenson’s life, the magical quality of his younger years reemerged fully developed and reaching far into every area of his life. There was nearly nothing

which was not IT, and therefore nothing which he did not enjoy. One such addition to his delight was people, the young and old, both friend and stranger. In contrast to finding most men, women, and children “ugly,” he began to marvel at their physical, intellectual, and moral beauty, enjoying their essence as a work of art.

Thus, from his childhood beginnings with IT to an old age spent admiring the extreme beauty which he saw in all life, Berenson’s life was exceptionally wonder-filled. He began his life with ITness while resting on a tree stump. He wandered through middle-age, achieving his societal dreams, but straying from wonder, his true happiness. As an old man, Berenson returned to his beloved ITness, all other aspirations forgotten, and embraced it intimately.

All ambition spent, I have no envy of jealousy left in me to intervene between me and what contemporaries are doing and being and to blind me to their worth. I can appreciate any and every gift to the point of worship and I discover in most creative things done nowadays far more to admire and to enjoy than ever before. I only wish I had the will to passivity becoming to my age.<sup>18</sup>

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### *How Does Wonder Work?*

Though the wonder demonstrated in the lives of Carson and Berenson differ in implication and intensity, one notable similarity is a distinctly emotional component. Indeed, scholars have and are increasingly studying wonder as an emotional state. Wonder has been examined for millennia, but it has not always been understood or approached in the same way, some scholars stressing the spirituality of wonder and some focusing on its physiological nature.

Among the most popularized descriptions of wonder is that of French philosopher René Descartes in the 17<sup>th</sup> century. Believing that all emotions originated as a reaction to something unexpected, Descartes called wonder “a sudden surprise of the soul which makes it tend to consider attentively those objects which seem to it rare and extraordinary.”<sup>19</sup> He viewed wonder as the chief of all emotions,<sup>20</sup> because it is the foundational surprise we experience when encountering something new. In other words, at the root of all emotions lies some degree of wonder, whether long-lasting or short-lived. Descartes believed emotions arose out of a logical discord between our expectations and reality. This discord surprises us and prompts us to question our surroundings, searching for some sort of explanation. When we understand the situation, whether consciously or subconsciously, we categorize it as negatively or positively impacting us, and react accordingly with an appropriate emotion. However, wonder is different. With wonder, the only conclusion we reach is that we simply can’t understand the situation. Caroline Bynum, Medieval scholar and past president of the American Historical Association, puts it this way: “Thus we wonder at what we cannot in any sense incorporate, or consume, or encompass in our mental categories; we wonder at mystery, at paradox, at admirabiles mixturae.”<sup>19</sup> This, then, is the reason Descartes named wonder the first of all passions. Wonder is our fundamental response when we can’t react any other way. Under similar reasoning, wonder and fear might be grouped as the two responses to total mystery, one positive and one negative. Indeed, wonder and fear are joined in many places.

Some scholars critiqued Descartes’ explanation of the emotionality of wonder, claiming it reduced wonder to basic physiology. Though his theory actually involved a significant cognitive element, it was in stark contrast to how many of the preceding medieval thinkers discussed wonder. Medieval thinkers saw wonder as “cognitive, non-appropriative, perspectival, and

particular.”<sup>19</sup> It was neither as intensely spiritual as Berenson’s nor functionally emotional as Descartes’, but it was the “recognition of the singularity and significance of the thing encountered.” Medieval thinkers described wonder by contemplating what we wondered at and what it meant to wonder, in part neglecting conjecturing as to why wonder might exist. Descartes was different by beginning to consider not only how wonder functioned in society but how the mechanisms by which it worked in the mind.

Medieval thought on wonder bore similarity to the philosophical field of phenomenology, though the latter was not founded until the 20<sup>th</sup> century. Phenomenology is distinctly void of psychological experiments and biological understanding, but is instead characterized by an ordered reflection of consciousness and its implications. This open, flexible approach is hardly rigorous in modern scientific standardization, a characteristic logically absent from medieval thought on wonder.

This open, reflective approach toward understanding wonder began to shift with philosophers such as Descartes, but it changed majorly in the 19<sup>th</sup> century. In 1859, Charles Darwin published *On the Origin of Species*, and publicized the theory of natural selection. As the way science viewed and approached natural phenomena changed, questions surrounding wonder shifted from “what does it do?” and “how does it work?” to “where did it come from?” and “how did it evolve?” If natural selection was true, the faculty of wonder was present for a specific evolutionary reason. This prompted the decline of phenomenologically-styled thought and the rise of physiological hypotheses which would explain wonder’s existence.

In 1872, Darwin himself published *The Expression of the Emotions in Man and Animals*, which offered an early explanation of wonder based on natural selection and physiology. He suggested that wonder followed surprise and was characterized by raised eyebrows, an open



mouth, and muscles that were primed for fight or flight.<sup>21</sup> These behaviors increased visual acuity and oxygen intake and prepared the body for physical action, thereby raising an individual's chance of survival in the face of something new. Darwin's explanation for wonder—and similarly for all emotions—was seminal in beginning the evolutionary investigation of wonder. However, his theory does not explain wonder as it is recounted by people such as Carson or Berenson. Darwinian wonder is strictly physiological, but Carson and Berenson both connect wonder with many other emotions and mental states. Logically, you might expect that eyebrows could be raised without the seemingly unrelated love, gratitude, sympathy, and others. I do not mean to suggest that Darwin was incorrect simply because he did not fully explain the intricacies of wonder, but it is important to recognize that his theory was purely physiological, which is in line with the thinking of his time. Darwin's reasoning represented the beginning of a new age in understanding wonder, one that soon began to also incorporate psychology and neurology into the search for an evolutionary explanation.

As the mind became better understood in the years after Darwin, the study of wonder moved beyond physiology only, delving deeper within, seeking explanations in the brain. For example, Steven Pinker, an accomplished cognitive psychologist known for his computational theory of the mind, examines the mind under the explicit pretense that all its neural connections and processes were built, one upon another, to ensure the mind's own evolutionary survival. For Pinker, "the mind is a naturally selected neural computer."<sup>14</sup> Under this theory, most of our distinctly human capabilities evolved during a time when people lived in hunter-gatherer societies. Our minds, and therefore our collective mental characteristics such as emotions, logic, and creativity, evolved to help us survive in face of physical challenges in our immediate surroundings such as identifying predator and prey. As human society and culture developed past

these historic challenges, capabilities like emotions remained only as residual characteristics of a time past. In other words, emotions are byproducts of evolution, abilities which were fine-tuned for challenges we may no longer face. Pinker doesn't suggest that emotions are useless, but that many of our emotions are exercised in the wrong arena. For example, Pinker claims that cultural phenomena like religion resulted from the misapplication of residual emotional capabilities. As physical threats to our survival decreased, humans turned their focus toward abstract questions like the meaning of life. Pinker suggests that our mental capabilities were not designed to find explanations to questions like these, but were strictly purposed for increasing our survival as we interacted with the physical world and its physical challenges. Thus, our minds did not evolve for abstract concepts such as those involved with philosophy and religion.

This reasoning does not deny the abstract thought equated with the medieval wonder of seeing the total singularity and remarkability of things we encounter. Instead, Pinker just suggests that wonder is wasted when it turns our attention to abstraction like the questioning of reality, something too great to grasp. Our wonder should instead turn our attention to thriving in our physical world. Under similar logic, anthropologist Scott Atran believes wonder can be best explained by understanding that the brain's primary role is identifying causes.<sup>14</sup> Wonder evolved to motivate us to understand the logical discords we encounter. It follows then, that if we conclude upon an abstract or mystical explanation (e.g., religion, according to Atran) instead of a verifiable physical answer, our wonder is wasted and does not benefit us.

While Darwin represents an evolutionary explanation of wonder based on physiology, Pinker and Atran represent the search for an explanation of wonder based on evolutionary adaptations within the mind. They provide an understanding of wonder far beyond Descartes' initial inquiries of wonder in the mind. However, Pinker and Atran are rigid in their claim that

some employments of wonder are unnecessary and wasteful. In his book *Wonder: From Emotion to Spirituality*, Robert Fuller suggests that Pinker, Atran, and anyone who thinks mystical and similarly abstract thought is unproductive, may not see the whole picture.<sup>14</sup> Fuller points out that humans have not evolved in static environments. While many of our distinctly human faculties may have initially emerged in a hunter-gatherer time period, they continued to evolve in dynamic environments, constructed not just of our physical surroundings but also non-physical cultural change such as social structure and technological advancement. Fuller expands Pinker and Atran's theory, suggesting a broader reason for wonder:

Wonder is also part of our organism's efforts to detect agency, but it does so by seeking the intentionality of a greater whole. Experiences of wonder respond to uncertainty by alerting us to the possible presence of a more general level of existence that—at least potentially—has causal relevance to our pursuit of well-being.<sup>14</sup>

Fuller suggests that wonder helps us become aware of phenomena which, though appearing to have no impact on our immediate, physical environment, have the potential to improve our overall well-being, that is, survival. This differs from Pinker and Atran's explanation in two ways.

First, wonder may cause us to consider explanations which, though appearing mystical or abstract, have potential to have a very tangible impact in our lives. If something is truly illogical and impossible, contemplating it is likely insignificant to our survival. Pinker would place religion in this category. However, if something which is possible, appears impossible only because it contradicts our present logical abilities, it would benefit us greatly to pursue understanding. For example, flight as we know it today would not exist had not someone wondered at the way birds fly and suggested the impossibility of imitating them. Or, consider

that the species which has walked on the moon is the same as the one which once worshipped not only it, but a whole host of celestial bodies. Thus, there are phenomena which, though appearing impossible, magical, or fantastical, can have a very significant impact on our survival. Science fiction writer and famed futurist Arthur Clarke, offers this advice: “Any sufficiently advanced technology is indistinguishable from magic.”<sup>22</sup> Put otherwise, while there may be things which truly exist in fairy tales only, we cannot readily distinguish them from that reality that has not yet appeared. Granted, we can’t be, and assumedly haven’t been, perfect in predicting which fantasies are which, but that doesn’t mean we shouldn’t continue wondering. Henry Maudsley, a notable 19<sup>th</sup> century medical doctor and psychologist, ends *Natural Causes and Supernatural Seemings*, a book investigating why supernatural beliefs persist, with this conclusion: “The history of human thought through the ages is in the main a history of a long series of successive illusions and disillusions; and what pre-eminence, except in length of days, has an illusion which dies at the end of a century over an illusion which dies with the individual.”<sup>23</sup> Maudsley, then, places no blame on those who believe in supernatural or otherwise relegate their wonder to the abstract and seemingly non-applicable. If human development is marked by a constant flow of “illusions and disillusions,”—as is, it should be noted, the scientific process of hypothesizing and revising—then wonder must benefit us by increasing our receptivity to the new and unknown. Perhaps our wonder-driven attraction to the magical and abstract—precisely what Pinker suggests has no bearing for our survival—is the very quality that leads us into the innovation and creativity that increase our survival and well-being.

The second way wonder offers a potential for improvement is that we, as a species, no longer face threats solely in our immediate physical surroundings. While it may be true that wonder developed to assist our interaction with our immediate, physical environment, human

society has developed so that purely physical survival is not enough. Modern human societies are not satisfied in merely surviving to reproduce, but pursue quality of life marked by things such as happiness, love, joy, peace, etc. These are precisely the feelings and experiences associated with wonder by writers such as Carson and Berenson. Wonder is not just a temporary positive emotional experience, but motivates a willingness to experience wonder. Nico Frijda, a prestigious and life-long researcher in emotional psychology, notes that wonder tends to cause us to be more receptive, more admiring, and more appreciative of our surroundings—it induces increased approach, not increased avoidance. Thus, wonder “is somewhat rare among the emotions in its functional capacity to motivate people to venture outward into increased rapport with the environment.”<sup>14</sup> Any emotion which fosters feelings of connection and belonging alongside those such as joy and peace should be considered very important to our day to day well-being.

Thus, here are presented two current interpretations of wonder in our lives today. The first, represented by Pinker and Atran, understands wonder as a remnant from early human evolution. Our mental capacity to wonder is a byproduct of our evolution, and though it emerged in a very different environment, it still has a beneficial role in our lives today, but not when it causes us to consider the abstract and concepts which do not impact our survival. The second interpretation, represented by Fuller, expands the first, suggesting that wonder-induced contemplations of the abstract actually does impact our survival, both at the individual and societal scale. Modern survival means more than simply remaining alive, it entails living richly and enjoying life, something which wonder helps accomplish. Further, wonder improves our societal survival by promoting a desire to innovate and develop culturally and technologically. Fuller’s school of thought does not deny Pinker and Atran’s psychoevolutionary claim that

wonder's chief reason for origin must lie in its ability to increase our survival of the challenges we faced in historic time periods. Instead, Fuller believes that in modern times, for the modern human, wonder may increase our survival in a different way or otherwise benefit in ways unique to our era. Ultimately, however, Fuller and other scholars less concerned with wonder's origin, suggest that wonder must be evaluated for its objective and subjective value and impact in life today.

Fuller, whose work is evaluating wonder and its interactions with religion or religious-like experiences, suggests evaluating wonder according to three standards formed by William James, the father of American psychology. At one point in his career, James, like Fuller, was studying religion, trying to understand the significance and benefit of various beliefs. James believed that scientific and logical reasoning were too often absent in discussions of religion and beliefs. Thus, to address his challenge, James formed three non-spiritual ways in which he could evaluate various religious experiences: immediate luminousness, philosophical reasonableness, and moral helpfulness.<sup>24</sup> Though significant scientific research exists concerning the mechanisms of wonder in the mind, James' criteria should be the standards of choice in evaluating emotional and sometimes spiritual experiences of wonder, as Fuller states:

They are meant to gauge the extent to which a particular religious sensibility enhances—or constrains—humanity's pursuit of the widest possible range of objective and subjective satisfactions. And for this reason they are criteria that can guide interdisciplinary investigations of the overall value of emotional experiences.<sup>14</sup>

This method evaluates wonder according to how it is at work in our lives right now, not according to its origin or historical development. While still subjective, wonder in some way meets each of these criteria.

First, experiences of wonder are immediately pleasant and beneficial. They are accompanied, as described by Carson and Berenson, by emotions such as joy and gratitude, and their memory is firm, lasting, in the case of Berenson, an entire lifetime. As Fuller reminds us, “the subjective feeling of an emotional experience is not, however, itself sufficient to establish its overall pragmatic value.”<sup>14</sup> Wonder must also qualify under James’ second criteria: philosophical reasonableness. Here, Pinker suggests that wonder is certainly good, beneficial, and “reasonable,” but not when it leads us to abstract explanations which have no bearing in reality. Pinker and some evolutionary psychologists suggest that the appetite wonder leaves us with should be exclusively fed with a pursuit of scientifically verifiable understanding. Whether or not this perspective is correct, wonder’s benefits must be weighed against any possible harms. As described, wonder is itself a positive emotional experience, but it is also important in fostering development of higher-order thought and cognitive abilities. In assessing James’ second criteria, we must decide whether the benefits of a wonder-driven life warrant the risk of faulty conclusions or even simply the quality of a life void of wonder. Finally, is wonder morally helpful? Apart from potentially believing something which isn’t true, Pinker and Atran do not provide any input here. Instead, we must again turn to the types of thoughts and actions which wonder creates in people. For Fuller concludes:

Wonder alters perception in such a way that we are afforded a new chance to choose how to be—to become true individuals and true citizens of the universe. Assessed for their “moral helpfulness,” then, experiences of wonder would seem uniquely capable of luring us into what Rachel Carson called a reverence for life.<sup>14</sup>

For this reason, wonder has potential to increase our desire to act morally in relation to the world and to others. It must be noted, however, that Berenson’s childhood wonder created in him such

a desire to re-experience “Itness,” that It became his only goal and only idea of true happiness. Could a wonder such as this detract from a general openness to the world, and instead become its own selfish goal? Berenson himself described his desire for Itness as so intense that for his entire adult life, he could not at all enjoy things such as art or beautiful landscapes without placing his “identity into that work of art, without becoming it.”<sup>18</sup> While it is difficult to understand the intricacies of a subjective experience like Berenson’s, experiences of wonder must be balanced with other emotions. Wonder should serve to enhance quality of life, not replace it.

Thus, wonder, when evaluated for its immediate luminousness, philosophical reasonableness, and moral helpfulness, must be considered as an important emotional faculty, both in the individual and in our collective society and culture. Regardless of varying scientific explanations for how wonder functions in the mind, wonder benefits us greatly right now, even, perhaps, if it has potential to lead to erroneous conclusions alongside productive innovation.

That wonder, if even for the briefest duration of time, expands our range of subjective richness is alone warrant for considering it among humanity’s most sublime emotions. Its value to human life can be justified in this criterion alone.<sup>14</sup>

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### *Understanding Wonder by What It’s Not*

To better understand the practical function of wonder in our lives, we can observe what our lives look like without wonder. There are many characteristics which can be present in the absence of wonder, but one demands wonder’s absence: boredom. Boredom is a common experience, yet its frequency is not universal. There are those for whom boredom is a rare and unexpected visitor, and who, upon its knocking, are quick to extinguish its effect. There are some



whose parents did not tolerate their cries of boredom, instead lovingly and temporarily banishing them to the great outdoors, or perhaps just a box of wooden blocks in the living room corner. There may also be those children fortunate to have forgotten boredom before ever learning its name, who developed a quickness for turning sticks into rickety bows and ordinary objects into games. However, these warriors over boredom are aging, their ranks thinning, their ideology and standards fading quietly away. Their defeat has not yet been sealed, but their cry is growing faint, evermore silenced by the contagious epidemic of boredom.

The Oxford Dictionary defines boredom as the experience of “feeling weary and impatient because one is unoccupied or lacks interest in one’s current activity.”<sup>25</sup> This may serve as a baseline definition for the concept of boredom, but boredom is highly variable in its intensity, expression, and implications.

Psychologist Cynthia Fisher described boredom as “an unpleasant, transient affective state in which the individual feels a pervasive lack of interest in and difficulty concentrating on the current activity.”<sup>26</sup> Fisher provides an expanded and more explicit definition of boredom, helpful in making a closer examination of the phenomenon. First, boredom is a definitively unpleasant state, it does not provide satisfaction or pleasure, but creates a feeling of mental—often even physical—agitation. Second, boredom is an affective state, meaning it is related to an individual’s feelings and emotions. Third, boredom involves a lack of interest in one’s *current* activity. Boredom is not devoid of desire and interest, but is an experience where the energy of desire and interest are not devoted to one’s current preoccupation. This is important, signifying that the agitation felt within a state of boredom is related to the disparity between desiring to be passionately focused on an activity and the inability to do so.

While Fisher's acknowledgement of a lack of interest in the task at hand does not exclude the possibility of interest at large, other authors, both in popular and scientific writing, explicitly describe interest's preservation. Prominent American psychiatrist Ralph Greenson characterized boredom as "a state of longing and an inability to designate what is longed for."<sup>27</sup> Greenson's boredom is far from empty of desire, but in actuality, requires desire. Boredom cannot be present without desire, for the agitation and discomfort of boredom stem from not a lack of interest but the lack of something upon which to focus one's existing interest. Similarly, Leo Tolstoy called boredom "the desire for desires."<sup>28</sup> In other words, boredom occurs when one has deep-felt desire but inability to do, to feel, to understand, to be excited, to be passionate about something, to live a life full of meaningful actions and experiences.

And so it is natural that boredom has also been defined as "the emotional apprehension of meaninglessness in some aspect of the subject's experience of their circumstances."<sup>29</sup> When in a state of boredom, there is a pervasive feeling of "eliteness," that there is something, someone, somewhere else that would better occupy your time, thereby imbuing your life and your actions with greater meaning, value, and consequences.

In her definition, Fisher also calls boredom a transient experience. However, other authors, notably 20<sup>th</sup> century German philosopher Martin Heidegger, recognize a more permanent experience of boredom, something Heidegger called "profound boredom."<sup>30</sup> Heidegger describes profound boredom as "an emptiness by which we do not expect anything from our surrounding, by which the world has fallen dead." He continues, declaring it as the "positive refusal" of "one's own possibilities of doing and acting," a self-wrought deprivation of "the very possibility of possibility." Heidegger's profound boredom bears similarity to

descriptions of depression and appears far from the familiar boredom of comparably insignificant experiences, such as waiting in a long line or watching a bad movie.

Similarly, psychoanalyst Haskell Bernstein identified two strains of boredom: responsive and chronic. Responsive boredom refers to the type of boredom casually experienced in day to day life, it is boredom in the traditional sense of the word. Responsive boredom is an “affective response to an appropriate external situation,”<sup>31</sup> such as a doctor’s office waiting room or a monotonous task. Bernstein is careful to note that this is a response to both something external and appropriate, referring to the common every day activities that might arouse this feeling in anyone. Indeed, this boredom is broadly accepted, and in many situations, expected to be present as a response to the universally dull parts of our days. In contrast, Bernstein describes chronic boredom as an internal dysfunction, originating neither from an external environment nor from an activity especially dull in nature. Similar to Heidegger’s profound boredom, this is the oppressive, felt-in-the-bones, and uneasy discord with one’s passion, purpose, and individual existence.

Heidegger and Bernstein further portray the dispiritment of their profound and chronic boredom as an emptiness born of oneself. While not suggesting that the experience of profound boredom is a conscious decision, they distinguish that it is not caused by a proximate external cause, but is caused by a more ultimate internal misalignment. In a nutshell, there is boredom that is caused by very real and appropriate external stimuli, such as monotonous tasks, and boredom that is present without a recognizable reason. The former, Bernstein’s responsive boredom, can be an infrequent experience in an individual’s life, or if extended (e.g., a monotonous job made up of monotonous tasks), it may bear a permanent appearance.

Despite the outlined contributions, boredom remains a difficult concept to define. In any discussion of boredom, however, both time and source must be considered. Boredom may exist either as a momentary discomfort or a weight which invades quality of life itself. Boredom may originate either externally, as during monotonous tasks, or internally, as caused by some persistent mental state. Despite this recognized difficulty in defining boredom, it is generally easy to understand and observe: a child—or, just as easily an adult, though sometimes less obvious—sitting down, mentally antsy, with a face longing for *something* to touch, to talk about, to listen to, or to otherwise receive attention. We have all seen boredom. Ease of recognition and difficulty of definition make boredom more easily discussed through its depiction.

I've heard countless times, though much more frequently when I was younger, the comment, "you must be bored." I cannot remember a single situation in which this statement was true. Typically, these comments were offered amidst an unconventional activity, such as trying to stack rocks on a bent piece of straw, drawing mazes in the sand, or any number of other games inspired by the loose objects around me. I think the observer, usually an adult, saw this behavior and assumed that it was present as a responsive solution to the problem of boredom. To them, I was killing time, a sure sign that I was attempting to quench the discomfort of boredom. These comments always confused me. In my mind, my newly invented activity was a pastime like any other, no different than if I had been playing a board game, hiking, or watching a movie. There was an assumption that playing with rocks was my last resort, that as soon as a better opportunity was available I would leave my maze in the sand behind me. This was not true, as I was not bored. Boredom was not the reason that I began a new activity, but my invented pastime was the reason I was not bored.

It is important to recognize the distinction between boredom and the opportunity for activity. Empty time and lack of current mental captivation do not necessitate boredom, but boredom, rather, is a *possible* reaction. Empty time, time lacking activities and stimuli that captivate the mind, can initiate action, as it so often did for me, or it can initiate boredom. Because of their close association, many writers are proponents of boredom, attributing to it the benefits of unstructured free time.

Many writers believe that boredom leads “to creativity and problem solving.”<sup>32</sup> Author and journalist Anna Quindlen notes the apparent fade of unstructured summer days and the increasingly invasive standard that children be busy. Quindlen questions whether children would benefit from the return of simplicity, empty schedules, and hours spent alone. She suggests children “be given the gift of enforced boredom for at least a week or two, staring into space, bored out of their gourds, exploring the inside of their own heads.”<sup>33</sup> Quindlen’s view is growing in popularity, as more and more parents and schools are pining for an increase in unstructured time. Indeed, there is a rise in popularity of schools which follow the framework of the original kindergarten (literally, children’s garden), such as Denmark’s forest kindergarten, where children are encouraged to explore, play in, and learn about a natural environment in an unstructured fashion. In each of these movements, the focus is much more on unstructured time and its benefits than on boredom. Because boredom has been assumed as the necessary and expected outcome of free time, the benefits of free time have been often attributed to boredom. The motivation behind Quindlen’s proposition that children be gifted “enforced boredom,” is the hope that while forced unstructured time may cause initial boredom, it will allow children to develop an aptitude for curiosity and to grow out of habitual boredom. It is my view, that this

type of education should also encourage the maturation of wonder, an effective displacer of boredom.

During the summer of 2017, I worked for the Idaho Department of Fish and Game in Coeur d'Alene, part of Idaho's beautiful panhandle. At the end of the summer, I drove back to North Carolina with my sister and a friend, planning visits to several national parks and scenic locations along the way. Our first stop was Stansbury Island, Utah, a peninsula extending into Great Salt Lake. As we approached, the road turned to gravel, its potholes increasing in size with every mile. We arrived at a sign describing the area, parked, and exited to stretch our legs after a long day of driving. Immediately, I noted the astounding silence—it felt heavy, as an invisible blanket had been laid over the entire area. Behind us lay a treeless golden hill and in front of us lay a windless, salty beach, pink water, and a setting sun. As I stared at the incredible beauty, I felt as though I had lost altogether my sense of hearing. There were no birds calling, no insects beginning an evening symphony, no ripples breaking upon the shore, no wind to rustle leaves, not even a distant rumble or car engine. Even the crunch of salt beneath my feet sounded muffled and distant. It was phenomenally quiet.

It was not without disappointment that we departed the next morning, ready to make a several day tour through Zion National Park, Grand Canyon National Park, Mesa Verde National Park, and Arches National Park. Each was incredibly beautiful, full of bold colors, impressive geologic features, and fascinating histories. However, as we traveled from park to park, I noticed a change in my approach and attitude. The unforgettable experience upon Stansbury Island was never fully repeated. At Zion, competition struck, and I was distracted from the experience by racing to the top of Angel's Landing. Our visit to Grand Canyon was initially unplanned, a spontaneous addition at the expense of an extra day in Zion. We reasoned that we had

experienced Zion and might as well add in another park while we were nearby. After Grand Canyon, we drove along the border of Arizona and Utah, spending a night beside Mexican Hat, a particularly sombrero-shaped mushroom rock, and visiting Monument Valley and Four Corners. After this, we arrived at Mesa Verde, whose scenery, while beautiful and interesting, could not compare to the raw magnitude of the larger parks, and I was quick to be ready to leave. Finally, we weaved out of Colorado and back into Utah, where we visited Arches, a rippled sea of orange scattered with splashes of towering sandstone. It was at Arches that I started to notice my shifting attitude.

The morning after we had arrived at Stansbury Island, I walked to the top of the shrubby hill we slept beneath. What I expected to be a short distance, quickly grew to several miles and an impressive view. I was rewarded with a sunrise view of Great Salt Lake, a fleeing jack rabbit, and an incredible peace. In that moment, I was content, and would have rejoiced had I been offered several more days to remain there. It was difficult to return to the car to make breakfast. In contrast, with each additional place we visited over the next few days, I was more ready, and more quickly so, to visit the next area. The beauty in each was astounding, but I was astounded for shorter and shorter periods. More quickly I became overwhelmed with readiness to continue on, a desire to take on a new experience, boredom.

Here I have presented two situations. In each I was surrounded by the same people, similar locations, and similar time frames. On Stansbury Island, I was many things, each far from boredom. I was full of gratitude, peace, joy, and contentedness. I was in awe of the beauty before me. I greatly enjoyed the view, the sounds, the smells, the feel of the rocks and the cool morning air. I was unable and unwilling to find any fault. In Mesa Verde, where my attitude shift was nearly complete, I was some of these things some of the time. I was amazed at the cliff

dwellings, the open-faced caves chipped away in the rock face. I was fascinated by the museum we walked through, the history of the people who had lived here so long ago. The drive in was beautiful, and I thoroughly enjoyed the ascent up the plateau. The geologic formation of the “green table” was astounding. And yet for all of this just hours later I was struck with boredom. With each additional feature of the park which we explored, my awe, curiosity, and pleasure were shorter lived. In each they were present, but I was more and more quickly ready to leave. By the end of our short visit, I was ready to leave, excited to leave. A sort of restlessness was upon me.

At both locations, Mesa Verde and Stansbury Island, I experienced very similar positive emotions such as awe, wonder, amazement, gratitude, contentedness, and peace. However, at Mesa Verde I also experienced the unpleasantness of boredom, a negative affective state. In reminiscence, I can easily see that at Mesa Verde, my boredom intensified as my wonder faded. However, at Stansbury Island, my wonder faded slightly only after we had departed, and even then, it did not fade into boredom, but to the fond recollection of a beautiful experience.

Here we can certainly learn from Leopold, the philosopher and scientist remembered as the father of wildlife conservation, who fondly recalls his exploration of the Colorado River Delta: “Never did we plan for the morrow, for we had learned that in the wilderness some new and irresistible distraction is sure to turn up each day before breakfast. Like the river, we were free to wander.”<sup>34</sup> His joy is evident in his recollection of a wilderness that appeared “forgotten since Hernando de Alarcón landed there in 1540.” Leopold, in the wilderness and free like the wandering river, was not bored. For as certainly as he was ready for some new distraction gifted by the river, he was content, willing also to remain in the peace of his present situation. His writings exude wonder and fascination in the river he traveled upon. I am certain that while I sat



on Stansbury Island that July morning, Leopold and I shared an experience of wonder. It is important to note that Leopold did not plan. His gratification was brought solely by unexpected, unplanned, “irresistible distractions” which he found each day. Likewise, upon Stansbury Island, I had no plans. I woke up to a rising sun. I looked out of my tent and saw a golden hillside, waiting to be walked upon. I followed the hill upward, distracted by rocks on the ground and a single tree watching over the magnificent lake. I walked, listened, saw, felt—but I did not plan.

To plan is to expect. I planned to go to several national parks as I returned from Idaho to North Carolina, and within each park, I made plans to see, do, and experience certain things. I picked up a map, over heard a conversation, or saw a picture that made me think, “I want that as well. I will plan to go there, to do that, to experience that.” It is following the creation of plans, whether broad like the trip in the first place, or minute, like the choice to try a different trail, that we also create an expectation, the expectation that we will in fact experience what we planned to experience. Expectations are the natural, reasonable, and acceptable outcome of planning. However, when we make plans, we expect a certain gratification, and it is easy for us to place the weight of our pleasure on the “completeness” or “perfection” of the experience, thereby separating ourselves from blame should the experience fail to provide pleasure expected.

Nineteenth-century philosopher Søren Kierkegaard acknowledged a similar concept in his description of love: “It is a sad upside-downness, but all too common, to talk on and on about how the object of love should be in order to be lovable enough, instead of talking about how love should be in order that it can love.”<sup>35</sup> Similarly, when we plan, we often allow ourselves to seek an experience worthy of our pleasure, rather than to find pleasure in our experiences. Again echoing this reasoning, researcher and author Mary Mann discusses a Japanese legend of two friends, “‘one who played the harp skillfully and one who listened skillfully.’ The listener’s skill

is just as useful as that of the musician, the act of listening just as imbued with purpose as the act of making music.”<sup>28</sup> To love well, to listen well, to wonder well, depend not on increasingly worthy objects of focus, but on the increasingly skillful internal capabilities of love, listening, and wonder.

Following this train of thought, wonder may be consumed or imbued. To experience any wonder, a reason for wonder must be present and recognized. Once this recognition occurs, wonder is then demanded of the wonderer and it must be present. When wonder is not experienced, a reason for wonder has not been recognized. When it begins, the distinction between consuming and imbuing wonder is small, easily overlooked, and seemingly insignificant.

Leopold upon the Delta and I upon Stansbury Island experienced wonder by imbuing it. To imbue wonder is to ascribe beauty, complexity, intensity, or other reasons for wonder. Leopold, as he followed the river in its way, delighted in the emerald waters that allowed his journey and excitedly looked for jaguar signs among deer tracks. Reasons for wonder abounded because he looked for them. He searched the riverbed, the vegetation along the banks, the sky, and ascribed beauty and complexity to them, then delighting in the world he was discovering. Where reasons for wonder are recognized, wonder must be present.

Alternatively, to consume wonder is to put off the ability to ascribe reasons for wonder, instead placing the responsibility of your wonder on the object of your focus. This is infantile wonder which requires increasingly wonderful objects to be aroused. The infantile wonderer walks through life waiting for a reason for wonder to arise. In contrast, the mature wonderer walks through life actively imbuing reasons for wonder, accepting a personal responsibility for one's wonder.

Thus, these are two forms of wonder at work in our lives: infantile (consuming) and mature (imbuing). The law of diminishing returns is present in infantile wonder. When the creation of new wonder is absent, each time wonder is consumed, more is demanded. Each experience of wonder creates a deficit where there exists less and less which demands wonder. Infantile wonder requires increasingly complex, beautiful, and impressive stimuli. After leaving Stansbury Island, my wonder began to turn infantile. At Zion, I was in wonder, but I consumed it. The impressiveness of Zion made recognizing reasons for wonder easy. The park abounded in magnitude: great heights, great colors, and great contrasts. Because I wasn't required to actively seek wonder of my own, I developed a passive wonder which I carried along to different parks. By Mesa Verde, I was a consumer only, and finding Mesa Verde lacking in the immensity of experiences such as the Grand Canyon, my wonder was short-lived, turning to boredom.

Just as more is demanded each time wonder is consumed, so more is given each time it is imbued. Every act of seeking wonder becomes training for the next, so that beauty and complexity are seen more quickly and wonder experienced more fully. As mature wonder flourishes, even the smallest of things bring out the most pleasurable wonder.

My wonder at Stansbury Island was mature. The wonder I experienced there was wonder I created, wonder originating from reasons I ascribed and recognized. When I began my morning walk, I didn't have any specific places I wanted to visit or expectations of what would happen. I was just curious, interested to see what might be hiding at the top of the hill and what I might see from a higher vantage point. Because of this, as I walked I looked, remaining attentive to what I saw, heard, and felt. When the environment was removed, my wonder remained.

Just as Bernstein distinguished responsive boredom as resulting from a temporary, external stimulus and chronic boredom as resulting from a more permanent, internal condition,

we can distinguish infantile wonder as resulting from a temporary, external stimulus, and mature wonder as resulting from an internally driven way of life. To some degree, mature wonder is infinite, always available so long as we remember to train and employ it.

The epidemic of boredom, both responsive and chronic, is being followed by the sprawl of infantile wonder, an only temporary fix to a large problem. But boredom cannot prosper in the face of a mature wonder. The mature wonderer has no reason for boredom because, as John Calvin says, “wherever you cast your eyes, there is no spot in the universe wherein you cannot discern at least some sparks of his glory.”<sup>36</sup> In other words, the universe is flooded with reasons for wonder. There is not one place or experiences in which wonder cannot be imbued.

Brilliant and curious physicist Richard Feynman understood this when he said, “I’m always looking, like a child, for the wonders I know I’m going to find—maybe not everytime, but every once in a while.”<sup>37</sup> He knew that wonder is meant to be imbued, that ability to wonder is a gift to find pleasure, peace, and joy in life.

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### *Developing a Sense of Wonder*

So then, I have discussed what curiosity and wonder are, depicted what life without wonder is like, and described mature wonder, but how do we begin to mature our wonder? To help answer this question, I collected stories of curiosity and wonder. I asked people to write for me about something they found very curious or something that filled them with wonder. Some of these stories were short and straight forward, while some were long and existential. I identified three themes across the stories that build a picture of how curiosity and wonder is at work on our lives.

First, curiosity and wonder are good, beneficial, and enjoyable. Each contributing writer agreed that curiosity and wonder play a positive role in our lives. For example, consider Katie, a campaign marketer with a passion for sunsets. “A vibrant sky is something that just excites me,” she writes, “Sunsets and sunrises with bursts of color across the sky fill me with happiness.” As discussed by Robert Fuller and demonstrated by people such as Rachel Carson and Bernard Berenson, being in wonder brings with it feelings of happiness and joy. Katie continues, “We have exposure to glorious beauty even in the most ordinary settings, and I think that’s magnificent.” In other words, wonder—at least mature wonder—is a beneficial ability because it allows us to experience happiness and joy in all situations. Frequently, writers referenced childhood, recalling their adolescent curiosity and wonder as pure and easily accessible. Matt, a student and nature lover, described a recent trip to Yosemite National Park. After “seeing waterfalls unimaginably tall” and “climbing to dumbfounding heights,” he reflected, “I felt like a child again, small insignificant, and awe-inspired.” For Matt and many others, emotional experiences of wonder yielded forgotten memories of a childhood where such moments of intense wonder were far more common. The wonder so easily-come while young had slowly faded.

It naturally follows, then, that the second theme I observed was a general acknowledgement that modern culture presents many barriers to curiosity and wonder. Not only are curiosity and wonder challenged in childhood (e.g., recall Anna Quindlen’s warning of too much structured time), but they are continually compressed in adulthood. For Nathan, a surveyor who dreams of living out of a van, decaying wonder is related to gratitude and what we expect of our surroundings. He writes, “In our everyday, sometimes mundane, lives it can be a challenge to have a sense of wonder. As we grow older, we lose the appreciation and the magic of things

around us that may have filled us with curiosity and child-like amazement in the past.” Nathan recognized that though the “magic” of childhood frequently seems to disappear in adulthood, it is actually our ability to appreciate and be in wonder that is dwindling. It is a great irony that the true mark of mature wonder bears much similarity to the childhood we left behind as we grew older. Peter, a follower of Jesus and husband, thinks that our surrounding culture and stimuli build an environment where curiosity and wonder are stifled. He writes, “I think that the tools that lead us to explore our curiosity also have the potency to mute our curiosity.” While Peter recognizes the attacks on curiosity, he doesn’t push the blame away: “We have the power, and the inherent decision to make as to whether or not our curiosity will multiply, or be silenced.”

The third theme I observed was a belief that curiosity and wonder should begin from within you, and not be dependent on your surroundings. This is in direct agreement to the previously presented concepts of mature and immature wonder. Immature wonder begins from without, and easily decays as it experiences pressure. However, mature wonder begins from within, and is able to withstand the pressures described by Nathan and Peter. Maturing our wonder does not require learning something new, but instead recalling and practicing the ability to wonder that is already in us. Remember how Matt’s experience of wonder in Yosemite filled him with memories of childhood. Like Berenson, whose childhood encounter with IT remained a guiding light in his life, the first step in reclaiming our wonder is recalling and pondering the experiences we have already had with wonder, whether they be from childhood or last month.

The next step is to recognize that wonder begins from within you and take responsibility for seeing in everything some reason for wonder. Iman, a researcher with a passion for water, does this well. “Deep down,” she writes, “I know each body of water contains something interesting.” Her approach is prefaced by a belief that a reason for wonder does exist, she only

need uncover it. Iman continues, “The longer and longer I stare, the more amazing things I see. . . The next time you pass a stream, pond, or sea, I encourage you to stop, and let your gaze drift along with the waves. If you do, I guarantee you’ll get a small taste of the amazing world I try to immerse myself in every single day.” Iman practices her wonder by stopping, letting distractions pass her by, and instead focusing intently on watching.

The third step to maturing our wonder is quieting ourselves and being still. This is the most difficult, because it requires us to use our time to sit still, whether physically or mentally, and simply take in our surroundings. Stacy, a college student in North Carolina, did this inadvertently during a lecture on developmental biology. Stacy began her college career “obsessively fixated on [her] studies with anxiety and overwhelm.” She had too little time to ponder the wonder of what she was studying, instead working hard to understand the information from each class. However, all this began to change, one day, when Stacy “began to tune in to the quieter, broader frequency that had been overshadowed for so long.” She began to ponder the process of fertilization, realizing that the creation of all new organisms, including each individual person, started with the simple fusion of two cells. Further, she comprehend the existential idea that these cells, and every cell in your body, are only made up protons, neutrons, and electrons. She writes, “It was upon these realizations that I was able to view my studies in science as divine, and have a sense of gratitude and agency to apply this new knowledge. This revelation moved me to tears.”

It’s easy to see biology as only a collection of facts, or to see the ocean as only a large, blue body of water. It’s easy to accept what is and think no more of it. But behind biological facts, oceans, and everything that is, exists an incredibly rich world of wonder. This is the sense of wonder from childhood that Matt remembered in Yosemite and that Katie experiences each

time she watches a sky fade into pink and red. This is the sense of wonder that Rachel Carson adamantly fought to instill in her readers and that Robert Fuller believes is central to richness of life as we know it. And this is the sense of wonder I believe is still in reach for every person willing to lay aside distractions, willing to sit and watch and gaze at the world, willing to live out their life in wonder.

“I am alive, and every moment is an opportunity to recognize the wonder in existence that never truly leaves us, but simply lies in wait for us to remember how to claim it.”

*Patrick, Student in North Carolina*



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