

“Burçin’s Galaxy, the Pale Blue Dot, and Keeping Track of Time”
 Proper 23B (October 14, 2018)
 Rev. Dr. David A. Kaden

>>Put a hand on our shoulder and point us in the right direction. Put *our* hand on someone’s shoulder, and let it matter. Amen.<<

Burçin Mutlu-Pakdil is a postdoctoral researcher at the University of Arizona. She also has a galaxy named after her: the “Burçin Galaxy.” Her story is inspiring. Mutlu-Pakdil is from Turkey, and, as a little girl she dreamed of one day becoming an astronomer.¹ Growing up she never saw women in this field of research; and she never saw a Muslim woman wearing a hijab in this field. She made it a life goal to change this. “When I was in college,” she said in an interview, “I was the only female in my [physics] class, and I remember I felt so much like an outsider. I felt like I wasn’t fitting in”² “Now,” she continued, “I really want to inspire people to do similar things. So kids from all backgrounds will be able to understand they can do science, too.” Her sense of wonder when looking up on a clear night drives her. “How is it possible,” she asked, “not to fall in love with stars?” “I find it very difficult not to be curious about the Universe, about the Milky Way and how everything got together. I really want to learn more. I love my job because of that.”³

Mutlu-Pakdil’s job as a researcher at the Steward Observatory at the University of Arizona has drawn worldwide attention. And earlier this year, she gave a TED Talk explaining her discovery of a new galaxy. “There are more than a trillion galaxies in the universe,” she said in that talk. “And my team discovered an extremely rare one, a galaxy that doesn’t look quite like anything observed before. This galaxy is so peculiar, that it challenges our theories and our assumptions about how the universe works. The majority of the galaxies are spiral,” she went on, “similar to our own Milky Way. We have strong theories about how these common galaxies form and evolve. But we don’t understand how *rare* galaxies form and evolve. An especially puzzling rare case,” she says, “is Hoag’s Object. It has a very symmetric central body surrounded by a circular outer ring [of stars], with nothing visible connecting them. Hoag-type galaxies are among the rarest types of galaxies currently known. There are fewer than one in 1,000 galaxies. It’s a mystery how the stars in the outer ring are just floating there in such an orderly manner. ... The galaxy that my team discovered is even rarer and much more complex than that. ... [The] system [we found] looks very similar to Hoag’s Object, with its central body and circular outer ring. [When we first discovered it,] we got very excited and thought we discovered another Hoag’s Object. But my research showed this is an entirely new galaxy type, now commonly referred to as ‘Burçin’s Galaxy.’” The TED Talk audience cheered when she said this. “We will not be visiting this galaxy anytime soon,” she said. “It is approximately 359 million light years away from Earth [which, seems far, but is practically next door to us in the universe.] ... This galaxy doesn’t just have an outer ring, it has an additional, diffused inner ring. ... There is currently no known mechanism that can explain the existence of an inner ring in such a peculiar galaxy. ... [T]he discovery of Burçin’s Galaxy ... highlights the gap in our knowledge of galaxy evolution. ... [W]e still have a lot to learn ... [about] the unknown.”

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¹ https://tucson.com/thisistucson/tucsonlife/this-ua-astrophysicist-has-a-galaxy-named-after-her/article_fdd22e3a-02df-11e8-82c0-13b25ac97a9e.html

² <https://sciencenode.org/feature/burcins-galaxy.php>

³ <https://sciencenode.org/feature/burcins-galaxy.php>

What struck me as I watched Burçin Mutlu-Pakdil deliver her TED Talk was how humble she was. She is becoming a household name in the field of astronomy, and she's an inspiration to young girls around the world, especially in her home country of Turkey. Plus, she has a galaxy named after her. And yet, with grace and gentle humor, she spoke of her discovery, and of the humility required to do research in her field, because there's still so much we don't know about the universe we live in. It reminds me of an observation that you've heard me mention before in sermons. It's a comment made by astronomer Carl Sagan, who once said, "We need only look up if we wish to feel small. It's after an exercise such as this that many people conclude that the religious sensibility is inevitable." And, he went on, "By far the best way I know to engage that religious sensibility, the sense of awe, is to look up on a clear night."⁴

Today's reading from Psalm 90 is attributed to Moses - it's the only Psalm that claims Moses as its author. There's no way for us to know for sure whether Moses wrote the whole piece, or whether he wrote chunks of it that got added to over time, or whether any of it actually goes back to him at all. But let's assume today that it *was* written by Moses - Moses, the "man of God," as the byline of the Psalm says; Moses the pioneering leader of the Israelites, chosen to spearhead the exodus out of Egypt; Moses the one who spoke regularly with God, who, as scripture says, was the only Hebrew prophet who knew God face-to-face; Moses, the household name in several religious traditions. We don't know the circumstances that caused Moses to pen the prayer that is Psalm 90. So, we are free to imagine some. I could imagine Moses sitting down, pen in hand, after, perhaps, looking up on a clear night in a moment of pensive solitude, and being overwhelmed with awe at the vastness above him. Ancient Moses knew far less about the stars than we do, but his reaction to the expanse above - like so many people who've come after him - drew him deeper into that "religious sensibility" of Carl Sagan - drew him toward what our tradition calls "God." And his sense of wonder and awe erupted on the page. I love how the old King James Bible translates Psalm 90. If I close my eyes as someone reads it aloud, I can imagine Charlton Heston himself - the actor who played Moses in the 1956 film *The Ten Commandments* - reading the script: "*LORD, thou hast been our dwelling place in all generations,*" reads the King James. "*Before the mountains were brought forth, or ever thou hadst formed the earth and the world, even from everlasting to everlasting, thou art God. ... A thousand years in thy sight are but as yesterday when it is past.*" It's archaic, seventeenth century English; and it isn't our best translation of the Bible; but the King James sure sounds good when read aloud.

Looking skyward on a clear night, "engag[ing] that religious sensibility, the sense of awe," as Sagan put it, I imagine that Moses felt small. "We need only look up if we wish to feel small," wrote Sagan. And in feeling small - feeling humble before the vastness of "God," that ageless, timeless, constant Presence, the "soul of the universe," as one theologian described God, that soul that existed before "the mountains were brought forth, or the earth took shape, or the galaxies evolved" - in feeling small and humble before this force that blinks an eye and a thousand years pass away - before the vastness and timelessness of God, Moses' sense of time narrowed. And we see it in his writing. His prayer in Psalm 90 begins with awe and wonder; it begins big and broad: a thousand years, ancient mountains, everlasting to everlasting. But it moves to the humble smallness of a single day. "So," writes Moses, since we're so small, since the universe is so large, and there's so much we cannot

⁴ Carl Sagan, *The Varieties of Scientific Experience: A Personal View of the Search for God* (New York: Penguin, 2006), 28, 2.

control, since we're like grass that grows, flourishes, and then withers - "So," he prays, "teach us, O God, to count our days that we may learn wisdom." The Hebrew verb translated as "teach" means something like "cause us to know" or "help us to reflect on" the fewness of our days, so we can make the most of each one.

After college, I worked for a year at World Impact Incorporated in Newark, NJ. The director of the organization kept a day-planner with penciled-in numbers in the upper left corner of each calendar day. For years, after taking Moses' advice in Psalm 90, he had been counting down the number of days he had left until he hit age 85. If Dr. Clarke is still alive today, he's well beyond his target of 85 years. But those penciled-in numbers helped him make it a daily goal to live as fully as possible. I was wondering this week how many days are in an 85 year old life. It just so happens that Google has a calculator for this: 85 years is roughly 31,000 days. Many folks live longer than this. 90 years is roughly 32,800 days. That's about 789,000 hours. Those of us around 40 years of age, have 50 years of life before us until we hit age 90. That's about 18,200 days left; about 438,000 hours. Those of you who've just retired at 65, you have about 9,100 days left until age 90. And those of you older than 90, you are, as scripture says, "full of days" and "full of honor." I was just 22 years old when Dr. Clarke showed me the penciled-in numbers on his day-planner. At 22, you still think you're going to live forever. But I now see the wisdom in numbering our days, in making the most of each day - the wisdom of old Moses, and of astronomers like Carl Sagan, who looked up and felt small, who realized that compared to ancient mountains, compared to the age of the earth, compared to the trillions of galaxies above and the hundreds of millions of light years that separate them and that separate us from Burçin's Galaxy, our lives pass in a blink. So, how can we make the most of the time we have?

I'm guessing that the rich young man who ran up to Jesus in today's gospel reading was wondering the same thing. I'm guessing that he, like Moses, was trying to make the most of his days when he asked the young Rabbi from Nazareth, "What must I do to gain eternal life?" Like Jesus, the young man was a Jew; so the phrase "eternal life" didn't mean for him, "how do I go to heaven when I die?" First century Jews had wide-ranging views on what happens after death. No, "eternal life" for this young Jew meant: how can I live God's way of life now to ensure God's blessing in the future? Or, how can I make the most of my life now? The rich young man is so earnest in this story, so sincere: he runs up to Jesus; he kneels before Jesus. His posture is exactly the same as so many others in Mark's gospel who run up to Jesus and kneel before Jesus seeking healing: please heal my daughter, said the kneeling Syrophenician woman; make me clean, said the kneeling man with the skin disease; how should I live, asked the kneeling rich young man.

We know nothing of this man's personal story, except that he was wealthy, that he was earnest, and that he strived to keep all the "big" commandments, like not being a murderer or a thief. "I have kept all these commandments from my youth," he told Jesus. He was a law-abiding Jew - a good citizen - no doubt successful in his career. But if we pick around more closely in this story, I think we can see that his focus is wrong. He is focused on himself: thinking of living fully in terms of inheritance, in terms of down payments now that gain interest and lead to future blessing *for himself*. "What must I do to *inherit* eternal life *for me*?" is his implied request. Notice that Jesus doesn't judge the man - doesn't speak harshly to him or criticize him; Jesus, writes Mark, looked at the man and "loved him." Then Jesus nailed him to the wall with a simple piece of advice. If you want to live fully, says Jesus; if

you want to make the most of each day, then live *for others, not yourself*: sell everything, says Jesus, give to the poor, and come follow me. It's not the man's money that Jesus has a problem with. Rather, it's the posture of the man's heart. "It is the heart that gives," said preacher William Sloane Coffin, "the fingers only let go." I imagine this rich young man to be a bit like Gollum in Tolkien's *Lord of the Rings*: so focused on a single thing that he was missing life around him. The ring poisoned Gollum's mind for 500 years in the caves where he lived alone; how much time did the rich young man waste focusing *only* on himself, on what he needed to do or be to gain *his* most blessed life as the world was passing him by?

I'd like to close today by describing a YouTube video created by Dvpoet9.⁵ Dvpoet9 has spliced advice on living well by Carl Sagan with lyrics and music from the Pink Floyd song *On the Turning Away*. The video begins with Sagan speaking during an interview: "What is important [to keep in mind,]" he says, "is those photographs of the earth alone in space. A fragile, blue world in this vast ... velvety vacuum of space. ... We don't have anywhere else to go. No other planet in the solar system is a suitable home for human beings." Pink Floyd's *On the Turning Away* is then cued up; and as it plays, images of the earth as a pale blue dot roll across the screen along with the song's lyrics. "On the turning away," sing Pink Floyd, "from the pale and downtrodden ... Don't accept that what's happening is just a case of others' suffering, or you'll find that you're joining in the turning away. ... No more turning away," they continue "from the weak and the weary. No more turning away from the coldness inside. Just a world that we all must share. It's not enough just to stand and stare. Is it only a dream that there'll be no more turning away?" During the guitar solo, Sagan's words appear on the screen: "The earth is a very small stage in a vast cosmic arena," he says. "Think of the rivers of blood spilled by all those generals and emperors, so that in glory and triumph, they could become the momentary masters of a fraction of a dot. Think of the endless cruelties visited by the inhabitants of one corner of this pixel on the scarcely distinguishable inhabitants of some other corner. How frequent their misunderstandings. ... How fervent their hatreds. Our posturings, our imagined self-importance, ... are challenged by this point of pale blue light." The video ends with a picture taken by Voyager 1 on February 14, 1990 from 4 billion miles away. The earth is a tiny speck in a cloud of stars.

...The subtext of the video is the same, I think, as that of Jesus when he gave some advice to the rich young man, and that of Moses in Psalm 90. How should we live, given that our days on this pale blue dot are numbered? Amen.

⁵ <https://www.youtube.com/watch?v=4J50WBac-5c>