David Gregory

DIVINE WINDOWS

Seeing God through the lens of science

‘This book leads the reader through metaphor, wonder and play to a deeper appreciation of science and God. If you have wondered how science and religious faith can be held together, this book is for you.’
Dr Bethany Sollereder, lecturer in science and religion,
The University of Edinburgh

‘This is a book of profound pictures – stunning images of the cosmos coupled with pictures of the wonder and playfulness of being both a scientist and a Christian. David Gregory explodes the myth that science and faith are boring! Rather he stimulates the imagination and engages curiosity to get to a picture of God that is compelling and liberating.’
David Wilkinson, professor of theology and religion, Durham University

‘David Gregory doesn’t just argue that science and faith can coexist – he shows us how science can become a sacred lens through which we glimpse the presence of God. As a filmmaker, I believe in the power of image, beauty and story to open hearts and reawaken the imagination. This book does exactly that. It invites the people to rediscover a deeper vision of Christ – not just as the Lord of Sunday mornings, but as the one in whom stars burn, tectonic plates shift and every breath holds divine mystery. This is not just a helpful book. It’s a needed one.’
The Revd Andy Thomas, Baptist pioneer minister, producer and director, Fuelcast Films

‘This is a wonderful book that truly opens divine windows. David Gregory moves effortlessly between science and faith with an easy style that gives the reader confidence to explore these vast topics together. David explores the way art and science interweave and stimulate our imagination to see new horizons. Prepare to be inspired!’
The Revd Margot R. Hodson, director of theology and education, The John Ray Initiative

‘Here is an affirmation of the visual and of imagination, awe and wonder in both science and theology… We are given a deep groundwork as preparation for spiritual reflection on scientific images, before being let loose to explore some pictures from astronomy for ourselves, with enough scientific and theological content to fire the imagination. This is a beautiful book to give to thinking friends, family and colleagues, as well as a resource for the church.’
Dr Ruth M. Bancewicz, church engagement director, The Faraday Institute for Science and Religion

This book is delightfully full of the familiar and the unfamiliar. Incredible images and arresting turns of phrase are brought together to give fresh perspectives around the intermingling of science, theology and the arts. It is most worthy of your time, your attention… and your spirit. Take up its invitation to dwell in all the richness and beauty that being a creature alive in God’s creation involves today!’
Dr Gavin Merrifield, general secretary of Christians in Science

‘Using his studies and experience of both science and theology David Gregory gives useful reflections to aid the praise and worship of our creator and the creator of the whole cosmos. David helpfully encourages us to use our imagination and powers of observation in discovering the infinite love of the creator, the creator’s genius and invention displayed through design and ever fresh novelty and originality, wisdom, order and playfulness of creation… I believe that this book will help many in their contemplation and worship.’
The Revd Dr John Weaver, former principle of Cardiff Baptist College and vice president of The John Ray Initiative

‘We have all got caught up in science versus religion as an idea we have to live with “and it has blinkered us.” What David Gregory through *Divine Windows* aims to do is to move into plain view the narrative imagination from which most of the scientific method actually emerges – and therefore create a space where this whole, stagnant debate can be reframed. David believes that this is an unexplored territory and through reframing we will be able to see the fingerprints of God and that will lead to human flourishing.’
Michael Harvey, missional entrepreneur, director ‘God and the Big Bang’

‘This book is written in a very accessible and engaging style. But the reader should not be fooled – this is a book full of ingenuity and subtlety of thought, shedding fresh light on familiar debates and opening up telling visual imagery to offer the explorer paths into a deeper appreciation of the wonder of God’s cosmos. Warmly recommended!’
Professor Christopher Southgate, University of Exeter

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A pilgrimage in science and faith

Postcards from Coventry

Coventry is a city in the heart of England with a long history, from the medieval era through the Industrial Revolution to the present day. Much of its industrial heritage has now faded, as has its historic medieval centre, lost in the bombing of World War II. The Medieval Guild Hall survived; the old Cathedral Church of St Michael's lies in ruins. Next to it stands the new, modern St Michael's Cathedral, renowned not only for its architecture but for its focus and work on reconciliation and peace building.

Attracted by its architectural design and stunning windows, along with spiritual motivations, over 100,000 people visit the new cathedral each year.

Yet the phrase ‘being sent to Coventry’ has darker tones. As with many old English sayings, its origin lies hidden in the mists of time. It might have originated during the English Civil War of the 17th century between King Charles I and Parliament. At that time, Coventry housed Royalist prisoners, but they were not well received by the Parliament-supporting population. Through the years ‘being sent to Coventry’ has come to mean a person being sidelined by their family, work colleagues or wider community – a lonely and hurtful experience to endure.

I’m glad to say that I have never been ‘sent to Coventry’. But I have been to the city three times, and on each occasion I have visited the cathedrals. Each visit has also involved science.

On the first occasion, in my late teens, I attended a science taster day at the university. In the physics lab, we exposed old pre-decimal silver sixpences to a radioactive source, measuring the time it took for the radiation absorbed by the coins to decay. From this, we could measure how much true ‘silver’ was in the coins, so dating when cheaper metals began to be included. From 1920, following World War I, the amount of silver was gradually reduced. After World War II, in 1947, ‘silver’ coins contained no silver at all.

While the purpose of this first trip was to experience what studying science at university might be like, there was also time to visit the nearby cathedrals. The old standing next to the new is a symbol of the hope of reconciliation in a broken world, of which being sent to Coventry is a part. I don’t recall much

of my impression from that visit. Certainly, there was no religious motivation or moment of spiritual encounter. While I chose to go to Coventry rather than being sent there, it was a time in my life when you might say that I had sent God to Coventry. Growing up within a church community, my growing interest in science led me to walk away from the Christian faith and belief in God. Within the rational view of the world, there seemed to be no space for such a being or need of such belief.

I next visited Coventry over 30 years later. This time, both science and faith were part of the experience. I was attending an evening event at the cathedral with distinguished speakers from the world of science, sharing their perspectives on how the two areas of human thought and experience might be held together. The cathedral was packed with people of all ages. For some, faith was a part of their lives. Many were students from local universities who, like me at that stage of life, had already sent or were thinking of sending God to Coventry. The resulting questions and debate were varied and rigorous, but in keeping with the spirit of reconciliation that is at the heart of the work of the cathedral, the atmosphere was generous.

Much had changed in my life in the years between these visits. I had studied science at university and worked for over a decade for the Met Office and the European Centre for Medium-Range Weather Forecasts, developing weather and climate models. While my love and passion for scientific exploration remained, out of it had arisen a journey of faith that eventually led me to

become a church minister. After 20 years in that role, my journey in life was beginning to take a new direction that wove together both narratives.

My third visit to the cathedral, a few years later, also involved the connection between science and faith. This time, I was not in the audience but part of a team from 'God and the Big Bang'. I had moved away from serving as a minister of a local church to focus on helping people in church and beyond to explore issues around science and faith. On this occasion, we were working with over a hundred 15- and 16-year-olds from local schools, only a few years younger than the age at which I first visited the cathedral.

While the students that day came from local schools with church connections, they were of many different faiths and none. Like me at their age, many of them came having already sent God to Coventry. Throughout the day, there were sessions on topics such as the Big Bang, evolution and climate change. We explored how science and faith view the world and life, together with their connections and seeming conflicts.

At the end of the day, questions were invited from the young people on science and faith. They were thought-provoking and at times stretched and developed the team's ideas of how science and faith can both be a part of their lives. At times we had to say, 'We don't know.' This statement, important in both science and faith, acknowledges there is more to explore and experience as we seek understanding of the world and our place within in. For in both areas, questions are important, more so than the certainty of truths.

Sent to Coventry

This sense of openness may be a surprise to many. The widely held belief is that the certainty of science's description and understanding of the world has sent God to Coventry. Over 50 years ago, at the end of the 1960s, the sociologist Peter Berger lamented that for most people, including many of the young people visiting Coventry Cathedral that day, 'the supernatural as a meaningful reality is absent or remote from the horizons of everyday life'.[1]

Through the half-century since Berger's reflection, the gift of science has continued to shape and enhance human life in many ways. The development of the internet and worldwide web has made communication with people around the world an everyday experience. Understanding our genetic make-up is leading to new medical treatments and helped stem the effects of the Covid-19 pandemic with the rapid development of effective vaccines. While we continue to complain about the accuracy of weather forecasts, with vast amounts of data provided by satellites continually orbiting the Earth, their accuracy has improved remarkedly – honest!

Many people also find science puzzling and overwhelming. There is a growing distrust of science, for example, in the anxiety over artificial intelligence or where genetic engineering may take the human species. Yet at the same time, there is an appetite for popular presentations of science. Science stories regularly appear on mainstream news programmes and social media feeds. Science and natural history series attract huge audiences, their

stunning imagery evoking a sense of awe and wonder. It is an experience that leaves viewers drawn beyond everyday experience, leading them towards a transcendent, spiritual realm. Yet so often these popular programmes paint a picture of a world where God has been sent to Coventry.

Within the worship of the Christian community, such imagery also increasingly appears. Yet, perhaps here too, there has been a failure to appreciate the value of this scientific imagery for facilitating divine encounter. Might it provide a fresh way of inviting people to encounter God?

Returning from Coventry

Popular science and nature presentations are nothing new. In medieval western Europe, 'bestiaries' were popular. Lavishly illustrated books, akin to nature documentaries today, they described diverse types of animals, both real and mythical. They were a celebration of God's creativity and wisdom in creation, evoking curiosity and praise.

Further back still, the script of the first science and nature programme can be found in the Bible. The book of Job tells the story of a man who endures tragedy, loss and pain that rob him of fullness of life. He cries out to God, seeking understanding. Friends gather around him and through many words seek to help him find answers to his questions and complaints. At the end of the story, God turns up in person, not with more words, nor with answers, but inviting Job to look at the wonders of creation: up to the clouds and stars,

around at the habitats and habits of a wide variety of animals, and down into the depths of the sea. At the end of it all, Job puts his questions to one side and declares: 'My ears had heard of you but now my eyes have seen you' (Job 42:5). For Job, seeing the wonder of creation means that God is brought back from Coventry.

In an age when we glimpse the wonders of nature and the cosmos in a deeper and wider way than earlier generations, how, like Job, can people's view of the world be awakened to see the divine presence through science's vision? Or as Timothy Radcliffe, the former head of the Roman Catholic Dominican order, asks, 'How can Christianity reawaken the imagination of our contemporaries?'[2]

Certainly, on my third visit to Coventry Cathedral, my imagination was stirred. Looking around the cathedral buildings, they spoke to me about science and faith. Like the cathedrals of old, there are wondrous stained-glass windows. Some are more abstract than others, yet they still have the ability to speak. The floor-to-ceiling curved Baptistery Window, which contains nearly 200 brightly coloured glass panels, fills the interior with rainbow coloured light. The rainbow is a natural wonder which has captivated people through the ages, created by the chance interplay of the powerful, ancient Sun and fragile, momentary raindrops. The distinct colours of light bend at slightly different angles as they pass through the raindrop, smearing an arc of colour across the sky. Power and fragility combine, becoming a symbol of hope, for the Bible speaks of the rainbow being placed in the sky by God as a sign of divine care for all living things.

In Coventry Cathedral, rainbow light dances over the font, carved in the form of a scallop shell into a boulder from Bethlehem, the birthplace of Jesus. This ancient symbol, carried by pilgrims, is an appropriate choice to mark the beginning of the Christian journey in baptism. And over the polished, stone floor of the cathedral, the rainbow light continues to spill and shimmer.

This floor marks the pilgrimage of life through millions of years revealed by science. Looking down as you walk along the cathedral's central aisle towards the altar, perhaps missed by many visitors whose vision is drawn up to the magnificence of the openness of the space, you walk on a carpet of fossilised shells. A memory of a world and life long since vanished, the carpet of shells marks the rich playfulness of evolution's game which has shaped life through the long history of the Earth. Sea creatures who basked in the flickering light of the Sun in shallow seas are now caressed by rainbow light, recalling God's creativity expressed within the natural world, which the divine artist declared as 'very good' in the Bible's creation story.

Good, wondrous and yet fragile. Over millions of years, competition for food and habitats, random changes in genetic code, cosmic events like the asteroid strike that contributed to the extinction of the dinosaurs, together with slow shifts in the Earth's climate, led to the passing of such life beneath my feet. A fluid moment within the long history of the Earth is now immortalised in beautiful solidity. New forms have dynamically arisen to take their place, a sign of the continuing creativity of God.

Yet, what of the suffering and death ever present from the beginning of the world? This is an ancient question arising from human experience, now asked in a wider way as science has revealed the twists and turns of the long journey of the Earth through the past four-and-a-half billion years. It causes us to question God's care for the world and for ourselves in our pilgrimage of life. These questions have been asked through millennia, with answers being hard to find.

Watching over you as you walk across this carpet of wonder and tears is a huge tapestry of 'Christ in Glory', Lord of all creation – the one, as John's gospel says, through whom all things were made: the risen, ascended Lord Jesus, alive yet still bearing the marks of death, of nails in his hand and feet, eternal symbols of Christ's bearing the brokenness of the world on the cross at Easter. He sustains the hope of life in the face of the continual suffering, for 'through him [God reconciles] to himself all things, whether things on earth or things in heaven, by making peace through his blood, shed on the cross' (Colossians 1:20). As with Job, this is not a definitive answer. Where science and faith embrace, there is the need to say, 'I don't know!' Still, in our unknowing, hope can be seen.

Signals of transcendence

Those who designed and decorated Coventry Cathedral with such signs and symbols perhaps never intended to speak to the relationship and reconciliation of science and faith. Yet, that is the power of signs and symbols.

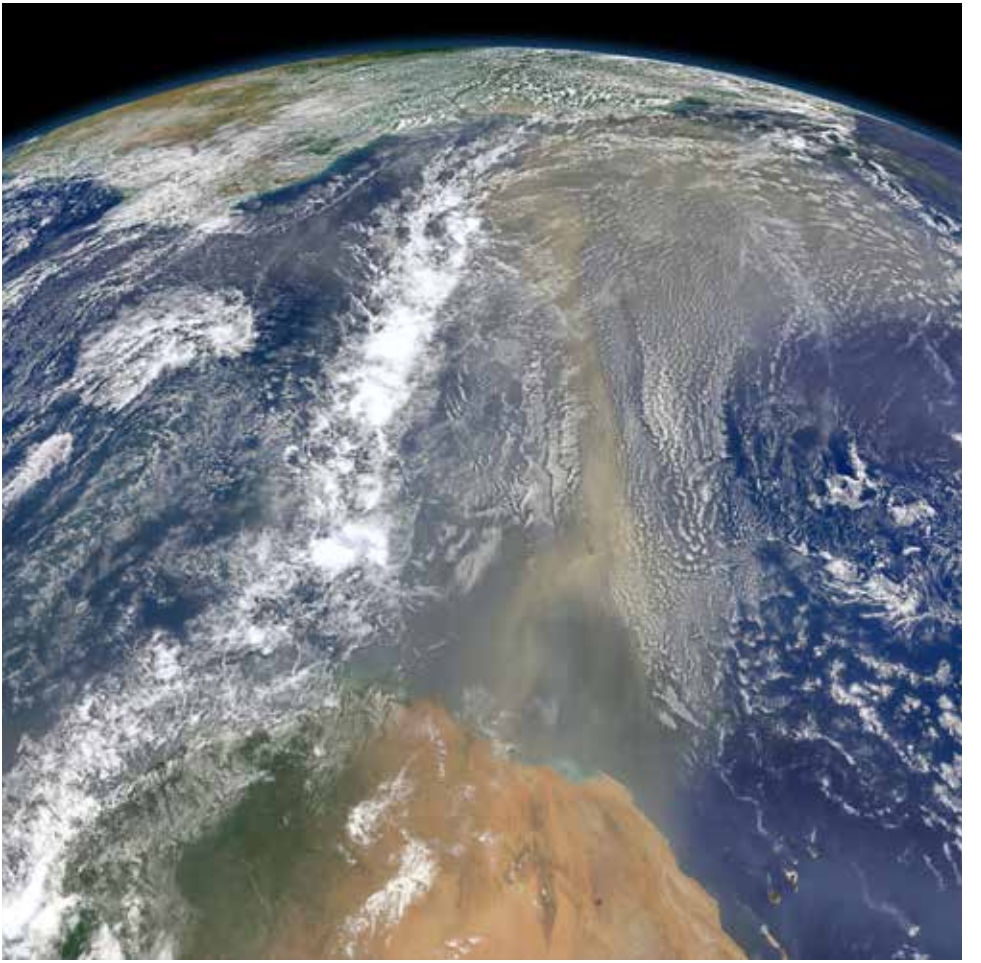
They have a fluidity, revealing new layers of meaning to the viewer. Truth is revealed not through the lens of the rational and technical, but through a playful, imaginative lens.

While Peter Berger lamented the loss of a sense of divine presence within people's vision of the world, he was not without hope that their imagination could be reawakened. He saw in people's everyday experience 'signals of transcendence'[3] pointing beyond material reality. Among them are the activity of play and the search for order within life, along with wonder, which the imagery of science so often evokes. Rather than science's vision sending God to Coventry, perhaps through what it shows of the world it may reveal such 'signals of transcendence', allowing people to journey further through the scientific vision of the world towards divine encounter.

This is the possibility that this book explores. Later, in chapter 6, we will look at some of the amazing images of the Earth, Solar System and cosmos that spacecraft and telescopes have given us over the past 60 years. But before we arrive there, we need to train our eyes to look differently through science's vision of the material world and cosmos. We may need to be fitted for a new pair of glasses that will soften the seeming solidity of what science reveals about the world and universe, enabling a fluid, imaginative view – akin to how the work of human art is viewed – that reveals meaning through signs and symbols rather than material descriptions, concepts and processes.

On this pilgrimage, we begin looking at the role visual experience plays within the Bible and the history of faith. Drawing upon the experience of Orthodox and western Christianity's use of art to facilitate prayer, together with Franciscan insights into how God might be glimpsed within creation, we will explore how imagery leads to spiritual encounter and awareness of the transcendent. Imagination plays a huge part in this, so we will need to look at the role it plays in theology, art and science. Then bringing all these strands together, we will shape lenses to gaze on the imagery of science based on Berger's themes of wonder, playfulness and order – themes which shape the process of science itself – bringing into focus the divine presence in science's vision. Finally, with our new spectacles, we will gaze upon some of the wondrous images of the cosmos that science provides.

So, come and join the journey, looking at the wonder of creation and for the wonder of the creator!



DUST

Image taken by Suomi weather satellite, across the equatorial Atlantic from Africa towards the Americas, 25 June 2014, showing a river of Saharan dust.

Dust

This satellite image is a vista that few have seen with their own eyes. Now, through technologically enhanced vision, it is one that all might share.

Job was encouraged to look up at the sky by his friend Elihu, to 'stop and consider God's wonders' (Job 37:14). To look up and consider how:

> The drops of water,
> which distil as rain to the streams;
> the clouds pour down their moisture
> and abundant showers fall on mankind.
> Who can understand how he spreads out the clouds,
> how he thunders from his pavilion?
>
> **JOB 36:27–29**

So, looking down, what do you see? What catches your eye?

At the bottom, we see the brown, dry Sahara, transitioning gradually through the Sahel to the lush forests of the lands of equatorial Africa. A line of thunderstorms flows from their verdant lands, driven by the heat of sun-drenched moist land and warm ocean waters, towering 10–15 km tall. Such storms traversed continents and oceans long before humans made their epic journeys of discovery around the globe.

In the middle, we see the lines of smaller, low, fair-weather cumuli that track the flow of the gentle trade wind. Look more closely still, at the bottom right, and there are hints of waves in the air, marked by long cloud streets, as the wind flows around the Canary Islands.

In the distance, hidden by the curvature of the Earth, is the forest of the Amazon, covered in clouds which provide abundant water sustaining its lush canopy. And on to edge of the Earth, there is a thin blue band. It is strange to think all the movement and energy marked by the clouds is contained in a thin layer of air coating the vastness of the Earth – as thin as the peel around an apple.

So, again. What did you see? What caught your eye?

This is a view Job never had. Perhaps it takes a God's-eye view of looking down to appreciate fully the wonders of God. Yet, Job responded: 'My ears had heard of you but now my eyes have seen you' (Job 42:5). Such a response asks a question of a generation with a bigger, broader and higher view of the world.

What did you see? What caught your eye? In the wonder of it all, did you glimpse divine power, majesty and handiwork?

Look again. Our eyes are often drawn to the impressive magnificence of the vast and large, the seemingly important. And yet, perhaps we have missed something. What is that brown smudge spoiling the pristine white of the clouds and the turquoise blue of tropical oceans? With our image enhancing apps on our cameras we might clean up the image. Yet, take it away, and the playful wonder that you see will be lost.

This smudge is a stream of dust flowing across the ocean from the dry Sahara, paralleling the clouds flowing from moister but not hotter climes further south. Grains of sand, picked up by the whirling winds of dust devils, found not only on Earth but across the red deserts of Mars too, are lifted high into the sky, to be blown by rivers of air across the tropical ocean and up into higher latitudes. The dust mixes with storm systems, turning the sky yellow and orange – cars too as it falls in the rain, leaving that annoying coating of dust.

Yet, without dust, the lace covering of clouds would be thinner, patchier. Water vapour would struggle to condense into droplets alone. Cloud condensation nuclei quicken the process. Small particles collect molecules of water vapour together, enabling droplets of water and ice crystals to form. Salt from the oceans; volcanic dust; smoke from human and forest fires; pollution from factories; Saharan dust – these enable the playful patterns of the clouds which catch our eyes.

God's play within creation begins not with the large, but with the small. From small, insignificant particles come life-giving water, sustaining the life of the world. And from dust comes life. The Bible's creation story speaks of life beginning from dust: 'God formed a man from the dust of the ground and breathed into his nostrils the breath of life, and the man became a living being' (Genesis 2:7). This first human, Adam, is a spiritual being capable of connecting with God yet also connected to the very stuff of the Earth. He, along with Eve, is nourished by the fruit of dust, fed by rain: 'mist came up from the earth and watered the whole surface of the ground… all kinds of trees [grew] out of the ground – trees that were pleasing to the eye and good for food' (Genesis 2:6, 9, see NIV footnote).

Dust still plays its part in sustaining the life of the Earth, not only in watering it, but in feeding the soil on which plants depend. In the verdant tropical forest of the Amazon, intense rainfall quickly washes out rich nutrients that cause plants and trees to flourish. These are replenished as dust blown across oceans falls to the ground, bringing phosphorus, iron and other chemicals needed for plants to thrive.

This helps create and sustain a natural garden, beautiful to see and good for food – a sign of God's playful creativity and provision for life. This is something that we can forget as we strive to re-shape the world to meet our needs for food, energy and material for our technology. Our activities can turn verdant forest and landscape to dust. The overgrazing of pasture at the edge of deserts by our flocks and herds can turn them to arid wastelands. Global warming

caused by pumping increasing amounts of greenhouse gases into the atmosphere shifts weather systems, leaving once fertile lands parched. To make space for our cattle, verdant forests are felled to be replaced by grassland, displacing people and other living beings that called them home. If we are not careful, we can disturb the complex balances of the world that enable its fullness.

In the Psalms, a writer praises God, recognising that they are 'fearfully and wonderfully made' (Psalm 139:14). Through the creativity of science, revealing the communion of big and small, the same might be said of the whole Earth. Each part, big and small, plays a role, interwoven with divine purpose. And made from the dust, we are reminded how our lives are deeply woven with the very fabric and life of the Earth and within the life and purpose of God.

So, look again. What did you see? What caught your eye?

In the wonder of it all, did you glimpse divine power, majesty and handiwork? And seeing this, what might you do to share in God's purpose to bring life to the Earth?

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Dive into Divine Windows – where science and faith meet.

Looking through a fresh lens of wonder, play and order, scientist and minister David Gregory invites you to see something of God's creative hand on the world around us revealed by the creativity of science. Through reflective commentary and an inspiring series of nature and science imagery like those seen in popular documentaries, the shaping of creation by a higher purpose is revealed in the vision of the universe unveiled by science.

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'Rediscover a deeper vision of Christ – not just as the Lord of Sunday mornings, but as the one in whom stars burn, tectonic plates shift and every breath holds divine mystery.'

THE REVD ANDY THOMAS

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David Gregory is a Baptist minister and missioner for Science and Environment. He holds a PhD in Atmospheric Physics, a degree in Physics and Astrophysics and a masters in Applied Theology. David is a regular speaker with 'God and the Big Bang', exploring science and faith with school children. He is on the grant board of Scientists in Congregations, part of Equipping Christian Leaders in an Age of Science, which supports science and faith projects in local churches.

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