

The Sacrament of Science?

*Comprehending the wonder, mystery and awe
of science in an Anglo-Catholic congregation*

A REPORT

From David Nixon and Ian Totterdell



SCIENTISTS IN CONGREGATIONS

The Sacrament of Science?

Comprehending the wonder, mystery and awe of science in an Anglo-Catholic congregation

Executive Summary

- In the context of a single Anglican parish of a catholic disposition, this project asked whether science could be regarded as sacrament: a means of grace and a way of knowing God more fully.
- Drawing on the particular skills of members of the congregation and on the tradition of the church, we sought to juxtapose sacrament and science through concepts of wonder, mystery and awe, and so learn more about both.
- We hoped to re-enchant science in the eyes of members of the St Thomas congregation, and to expand and explore ideas about sacraments.
- We visited the Meteorological Office and the Mathematics Department of Exeter University in person, and owing to Covid 19 restrictions, completed the research with on-line interviews and discussions with a former head of the Biology Department, and two members of the local GP surgery.
- With observations recorded, and interviews and discussions transcribed, both visits and on-line work produced a rich and textured set of data.
- Analysis produced six themes: the places and the people of science; ideas around scientific method; the relationship between science and faith; notions of beauty and wonder; expanding the concept of sacraments; the experience of Covid.
- The quality of discussion and the engagement of participants suggested that this project was successful in developing a cognitive and affective appreciation of both science and faith; furthermore, that the juxtaposition of science and sacrament expanded theological thinking around the concept of a 'sacramental turn', without diminishing the value of traditional church sacraments.

Who funded this project?

We were funded by a small grant from the Scientists in Congregations fund of Durham University, supported by the Templeton Foundation.

What were our hopes and intentions?

We wanted to make both science and sacrament exciting again, because we believe there is the possibility of mutual enrichment here.

Our project sought to question science by looking at it in relation to Christian sacraments, and to learn more about both science and sacraments.

We hoped to re-capture the wonder of science by framing this exploration within a theology of a mysterious and numinous God.

We intended to challenge an understanding of science as dull (too domestic or school-orientated) or fearful (in the area of ecology or weapons), and to encourage Christians to become more natural friends.

What did we do?

We formed a group of academics and members of the St Thomas congregation.

We visited the Met Office and the University Maths department in person, with follow-up seminars in a local café; and because of Covid, met representatives of the Biology Department and the local GP surgery on-line.

After each visit, there was a discussion group lasting about an hour in which observations, learning and reflections were more fully explored.

We encouraged parishioners to reflect on the meaning and wonder of the natural world, and to think critically about the relations between science and faith, with a particular focus on sacraments.

These groups discussions were audio-recorded so that a deeper qualitative analysis might be undertaken and further theological thinking developed, to be reflected in a final report, and in an article for a theological journal.

This project was given ethical clearance by the College of Humanities of Exeter University.

Where did we do it?

The context of this study is the single Anglican parish of St Thomas Exeter, in the county of Devon of south-west England.

In the 2011 census the population within the benefice was just under 20,000: predominantly Caucasian (96.2% white, including an increasing Eastern European constituency) with only very

small numbers from other ethnic groups.

There are significant areas of social and economic need within the neighbourhood, as evidenced by the high proportion of homes without central heating, the percentage (22.8%) of people with no qualifications, and the large take-up of free school meals and identification of special educational needs.

There are five Nursing and Residential Care Homes, as well as sheltered accommodation for the elderly. There is also a hospital dealing mainly with acute geriatric psychiatric patients. There are four Primary Schools, one Nursery School, and one Secondary School, all of which are state-affiliated.

What may be significant in symbolic terms is that St Thomas is situated on the other, or perhaps 'wrong' side, of the River Exe in a low-lying area which until the 1960s was subject to serious flooding in its mainly Victorian lower parts. The arch of the Debtors' Prison is still evident, and the former workhouse has been converted into social housing.

Its liturgical tradition has been on the catholic wing of the Church of England, with a memory of resistance to the Prayer Book reforms of Edward VI. A former Rector was executed by hanging from the church tower, owing to his implication in the murder of a king's messenger during the siege of Exeter in 1549. More recently, the parish has welcomed women to priestly ministry, and aims to be open and inclusive to all.

While the congregation consists of mainly older people, it also contains a range of academic staff who work in the Meteorological Office (also situated in Exeter), and in the Mathematics and Theology Departments of the University of Exeter. There are also a number of former employees (nurses) of the NHS. It was through these individuals that contacts were developed to access the scientific sites envisaged by this project.

What challenges did we face?

There were two main challenges which affected this research: at the start and in the middle.

Having obtained ethical clearance from the University of Exeter, it became apparent that research on an NHS premises, which was the original intention, would require a further and complex level of scrutiny. We therefore decided to replace the NHS visit with two others: a visit to the genome sequencing project in the Biology Department at Exeter University, and a visit by staff members from the St Thomas GP practice. This would take place on our premises to ensure patient confidentiality.

Neither of these visits actually occurred, because the other challenge arriving mid-way through was the Covid pandemic. When the researchers and congregation became more familiar with Zoom as an interactive medium, we decided to go ahead with virtual visits in the form of interviews followed by discussion, firstly with John Bryant, and then with two staff members from the surgery. While not as exciting as in-person visits, this way of completing the project was far from second class – indeed the richness of the material matched that of the 'real' visits.

Who was involved?

Revd Dr David Nixon, Rector and Project Co-Director.

Dr Ian Totterdell, Member of Staff at the Met Office, Project Co-Director, member of St Thomas congregation. (In the course of the project Ian retired from the Met Office and became a Churchwarden at St Thomas.)

Professor Nigel Byott, Associate Professor of Mathematics, University of Exeter, member of St Thomas congregation.

Professor John Bryant, Head of Biology Department (retired), University of Exeter, holder of a previous grant from the Science in Congregations fund.

Two members of staff from St Thomas Surgery, Cowick Street.

9 members of the St Thomas congregation (including as above) who were joined by two other staff members for the Maths visit and seminar.

What are our key findings? What evidence backs that up?

There are six areas of interest here. For each, we provide a summary of findings with some significant quotations from the discussion material. We also draw some interim conclusions.

- **The places and the people of science**
- **Ideas around scientific method**
- **The relationship between science and faith**
- **Notions of beauty and wonder**
- **Expanding the concept of sacraments**
- **The experience of Covid**

The places and the people of science

The buildings which house the Met Office and the Maths Department made an impression on participants, very positively in the case of the Met Office which opened in 2003.

I thought when I walked in the first impressions were sort of cathedral likeness.

I almost felt like I was going into a secret place.

Less so for the Maths Department, where a sense of communal identity was difficult to achieve. A member of the Maths staff who reflected on the buildings, also summed up the issues behind this project.

It is a very interesting question we build these wonderful inspiring places to, well, for acts of worship, and should we not be in the same sort of things for our work and particularly if we are thinking of science as an act of worship or a sacrament.

There was perhaps more interest in the people the group encountered, with Nigel's teaching demonstration about prime numbers drawing positive reactions, with Nigel's modest response.

I think it was the enthusiasm that you came with. And I certainly never had that enthusiasm about it when I went to school, you know, you were very enthusiastic about your subject and yeah, you seemed to really enjoy what you were teaching.

I guess I was relieved that, you know, people had turned up and people enjoyed it.

The human dimension appeared at the Met Office in a less-than-enthusiastic welcome for open plan offices,

The scientists have their little space, and they are quite possessive of it ...

and also in the displays in the foyer, showing weather charts for historic events, for example the night of the sinking of the Titanic, and for the D Day landings. There is also a Roll of Honour board for meteorologists who had died in service during both World Wars.

Ideas around scientific method

This was a rich area of discussion. The question *What is science?* arose early in the project, with one participant proposing the following definition

Science is the investigation of natural phenomena using the scientific method. The scientific method produces a hypothesis which you then devise experiments to validate or negate, or improve on the hypothesis.

In response to a proposed definition of science as being based on experiment, the group agreed that observational sciences like astronomy should also be included. At the maths seminar, the question was again put, and Nigel replied that his view of pure mathematics was that the aim of 'absolute truth' differed from the aims of empirical science.

I tend to see science as an interplay between theory and experiments in the main ... But mathematicians don't do that, mathematicians as we heard, you know, the happy prospect of absolute truth and being able to prove it exactly rather than just saying we, everyone, we've tested has come up like this. And so they're going for a slightly different goal than the scientists are, I guess.

As a result of the interest in this area, I asked the same point of the medical personnel with an answer focussed on individual need, with a gloss in pandemic conditions. John Bryant usefully supports this intersection of science and art, remarking that a research scientist needs to bring together these soft skills with the ability to interpret hard data.

when we prescribe, we prescribe in the hope that it will help, and we pick medications, and we pick phrases, and we pick management principles that we think will go together to help the particular individual. And that is very personal to that person. You can't really impose a treatment in the same way on any two people twice. You just can't do it.

I think particularly in the last nine months or so it has taken huge amounts of skill from medical professionals to deal with what's coming their way ... And I think there is an art in that. So I think medicine is based on scientific principles, it has to be, but the practice of medicine is essentially an art, I would say.

These responses support the open definitions of both sacrament and science, in order to discover what happens when they are juxtaposed. Hence this kind of discussion, which engaged the participant group and enlarged their thinking about science, might not have been possible without this sacramental framing. With the addition of the experiences and reflection about places and people, this outcome addresses directly one of the research questions about how science is

viewed in this community.

The relationship between science and faith

This project responded to the very large question of the relationship between faith and science in two ways: to ask these individual scientists how their Christian faith and practice of science worked together, and by contrast to enquire where there were tensions or disconnections. There was an emphasis here on God as creator, and on human understanding of the Creation through science and therefore of the person of God behind the science, with mathematics seen as a specific tool for doing this. Another participant commented that it is by understanding better the natural that the supernatural is understood.

You've understood something about the essence of how the system [of Creation] works. I wouldn't say it's far away. I celebrate and, I celebrate a God who can bring such complexity out of such simplicity. I think that is the thing and I think that's a mark of a very clever and wise Creator.

I am not a Christian because of what I found through the science, I have to say. I am a Christian because of my interaction with God. Person to person. But I find that I can see in the creation that I study things which are consistent which I find to praise God about. But for Him not just thinking he's created but about how such a person could be, could create such a thing.

there's something about God's creation which makes it amenable to our understanding and mathematics provides a tool which is an important part of reaching that understanding.

I think it was the Victorian theologian and scientist Aubrey Moore who said the facts of nature are the acts of God. And Copernicus who said that discovering knowledge about the world was an act of worship.

The other side of this coin is unavoidably the question of what happens to faith when the Creation 'goes wrong', either in biology or meteorology. Ian and John both recognised the tension here and were prepared to live with it, to the extent that this opened for John some new questions about the person of God, almost in the direction of 'negative theology'. Ian seemed slightly to sidestep this area of theodicy by distinguishing between his faith based on a relationship with the person of God for whom evidence is found in creation, and faith developed through observing the natural world. There was also a tension for Nigel, but of a different kind. As a mathematician, he is particularly alert to inconsistencies and contradictions, whether those are between one part of the Bible and another, or between the Bible and the insights of modern science. He wishes to articulate a consistent doctrinal position that does justice to the Bible, to Christian belief based upon it, and to the well-established discoveries of science.

Yeah. "Nature, red in tooth and claw" is the obvious way, everything eats everything else and it doesn't do it in a nice, kind, charitable way.

I mean, I guess I would say doing mathematics I very much want to see things in black and white, either this is true or else it's not true. That perhaps makes me a bit predisposed saying looking at the Bible to ask the wrong questions and say are we meant to read this bit literally, did this actually happen rather than what is God teaching us through it. So in some sense it gives the mind-set that is perhaps not most helpful always to a life of faith.

You discover more in Biology you know that the world is a violent place with suffering and

lots of suffering is biological.

I think one is disturbed. Um. I think ... You are trying to hold two things in tension but that is how the world is. ... maybe our understanding of God is actually completely wrong. We can relate to Jesus maybe but it's much harder to relate to God, the Creator. And that might help us live with this uncertainty of the inbuilt suffering in the planet.

The same area of question was put to the GP practice, recognising that we knew nothing of their beliefs in advance. Both individuals demonstrated a strong humanistic instinct towards the care of others, and in this example suggested that this concept of care was transmissible.

See from my point of view I feel what I do like I said it gives me a reason, helping other people. But I think most of us in life want to help other people and give. So I just kind of feel when I do what I do for somebody else I hope if they benefit from it they might then perhaps help somebody else.

Notions of beauty and wonder

The idea of beauty, wonder, awe ('the wow factor') originated in this project from a reaction to Euclid's proof of an infinite number of prime numbers which Nigel explained during the visit to the maths department. One of his colleagues remarked that its beauty lay in its concision and its simplicity. The question of beauty was consequently discussed at the 'visits' to the GP practice and the Biology department, with the medical staff seeing such a moment in the process of diagnosis and healing, and John feeling awe as a witness to DNA development. He also agreed that viruses including the Covid-19 virus had something of beauty about them.

I think it's an encounter with truth that we don't get anywhere else. We are so used to things being at best just fuzzy at the edges ... here the proof about the primes, at the end of that you knew that it was true, you knew in a way that we don't know other things.

And something about the beautiful proof is due to its simplicity.

I just love the human interaction which ... And that's what is exciting. And actually being able to help and to move somebody on from a place of uncertainty or diagnosis to treatment and out the other side. And to see them through that time and it's a real privilege, it's an amazing job.

There are beautiful moments in medicine when you connect with a certain person over an issue and you have a laugh or you get them to actually understand what you're talking about and there's a light bulb moment that comes on and you just think yes, this is great.

It is the work of a genius. ... You know, that you can't line up the building blocks of a protein against the building blocks of DNA, they won't. And you think how on earth did this ever, ever evolve? And so you're left with this awe that this has happened in evolutionary process.

John makes the specific link in this extract between the creation and the Creator as 'the work of a genius,' but there is a latent appreciation in the other contexts that the sense of beauty or wonder might be a pointer towards God. Much care is needed in terms of the medical responses: the other interviewees were part of the project because of their Christian faith; the evidence of the medical transcript suggests that neither interviewee is a Christian, but arguably there is a humanistic faith perspective here.

Expanding the concept of sacraments

These extracts focus on the heart of the debate here: the extent to which an understanding of sacrament can be expanded beyond the two (Baptism and Eucharist) or seven sacraments (Baptism, Eucharist, Confirmation, Ordination, Marriage, Confession, Anointing) which the Church designates. The desire to broaden a definition is seen with this comment about weather and John's remark, with the latter significantly perhaps linking the ritual of scientific method with the rituals performed by the Church.

I want to say that to me in a way weather is a sacrament because it is an outward and visible sign of how God, the grace of God gives us in providing for us to live on this earth. To provide our food, to provide the conditions we need to live.

And so I think I would say that in terms of a ritual, a set of rituals, the scientific method, the empirical method of science is giving us an insight into a Creator God, maybe not a deeply personal God but certainly a Creator God, then I would say that science is sacramental for those who have eyes to see and ears to hear.

The argument against expanding the definition of sacrament to include something like weather is given by Ian, the weather scientist, who wishes to hold with a more traditional conception of sacrament as a personal interaction.

but [sacrament] involves a relationship between a person and God. So this is why I might not be keen to include weather because I'm not sure there's a personal, an easily observable, personal connection between God and person, and individual people through weather.

A participant at the Biology visit responds to an invitation to think more boldly, evoking almost the medieval concept of a sacramental universe – the sense of universal interconnection in which all things participate and point towards the Divine. He also draws on the idea of grace. This raises a further question: if sacraments as understood traditionally are a means of grace, then are all or most means of grace necessarily sacraments, and if not why not?

we have the sacraments and you know, which are terribly meaningful but I think every day and everything we look at has a sacramental element to it and takes us, gives us the grace of God which is after all what the sacrament does, isn't it.

Nigel offers a joke about the statistician with twin children, which illustrates both the right question and the wrong question – the right question in that there is an expectation that a sacrament effects some change, the wrong question that such a change may not be open to empirical observation. The joke also reveals the commonplace assumption that as contemporary human beings our tendency is to read experience through an approximately scientific lens. What if, says the theologian, such human experience was read through a divine lens, which might be called a sacramental lens?

there is a sort of desire to say okay, what actually happens, how does [sacrament] work, what difference does it make and that's exemplified by an old joke about the statistician who had twins and got one of them baptised and kept the other as a control. [laughter] Well, what difference would you expect it to make?

Medicine is the closest natural fit to being a sacrament, and while a narrow sacramental definition of healing would be limited to anointing and private confession, a more holistic approach would include concepts of wholeness and reconciliation. The staff at the St Thomas surgery certainly interpreted their role at the start of Covid as being an engagement with the whole person,

noticing, for example, that the number of phone calls from a particular individual to the surgery reduced when she had the opportunity to talk to someone else. A further study might wish to test these ideas about the sacramentality of healing by questioning a Christian doctor about her practice, and by asking Christian patients how they understood their treatment in relation to their faith.

there was a patient I never forget that we started phoning her, initially there was no real conversation back and she always seemed low but a few phone calls later by talking to her she was actually responding ... Now she's learned the communication skills, she's now got a couple of volunteers that phone her, they've become friends.

The experience of Covid

Under the impact of Covid and reflecting back on the period March to October 2020, David asked the medical staff at St Thomas to focus on two related areas: to what extent did their practice change and to what extent did their thinking change? It was clear from the outset, that practice had had to be re-thought radically and rapidly, from the support of isolated individuals by phone (quoted in the previous section) to the sense of 'battlefield medicine' with little sense of a secure future. A change in practice also implied a change in thinking.

Yes, our practice had to change overnight ... it was really battlefield medicine. It was are you sick today and do we need to actually do something today? Otherwise, you know, we can't. And that was a real struggle in terms of your, our thinking and trying to implement that in ... And it was a real, that was a huge tension, huge tension.

And supporting different patients in different age groups, different circumstances, and not just thinking that people who are in their eighties are isolated or lonely, it could be somebody who's nineteen, twenty. So my role changed as in trying to see what support was out there to make sure they also got the support. So like I say my thinking has had to change about trying to support a wider range of people rather than just a specific group.

Under the pressure of the virus, the GP could not afford the 'luxury' (as it might have seemed) of individual patient-focussed solutions; rather there were urgent cases or not, and a need to ensure the literal survival of the medical team to continue even just at the level of emergencies. An element of this survival was much a greater detachment from the patients, all producing the kind of tension and difficulty described here.

But I felt in March [2020] that I had to almost become a battlefield commander and absolutely forget about the patients, just think about safety of our staff and what we were doing because that was our priority to just remain alive in order to deal with people and we didn't actually know what was going to happen, at the time we didn't know that we were going to get through the first wave ...

As the unfamiliar became the norm, with catastrophe at least in this part of the UK avoided, so there was room to reassert more of the previous philosophy, hence detachment began to dissipate. She joked that whereas before she might have woken at three in the morning, now she was waking later.

that detachment is already dissipated and I'm now waking up at four in the morning.

So what do we conclude from this project?

We succeeded in a number of ways, despite Covid 19

- We demonstrated the value of this project by the level of engagement during the visits (literal and virtual), the quality of discussion at the sites, and the depth of question and response at the seminars.
- We began to recapture the wonder of science and to expand our thinking about sacraments.
- In particular, we discovered that a deliberate openness of the definitions of both sacrament and science was essential in order to discover what happens when they are juxtaposed.

In terms of scientist and science, our conclusion suggests three parts

- the scientist is viewed as a whole person using a scientific method which includes soft skills
- mathematics as a science remains an open question
- medicine is seen as the practice of scientifically trained people using their human skills for individual benefit

A further observation is the small irony that these results have been produced by the qualitative methods advocated by the so-called soft sciences.

In terms of sacrament, the suggestion here that the sacramental universe as a way of thinking has disappeared less than might previously be considered, or in some form is being re-discovered. A so-called 'sacramental turn', as a result of attention to climate change, is rooted in a much greater awareness of connections and networks, not least also because of the experience of Covid 19. A 'sacramental lens' encourages a view that values both the relations between human beings, and the wider and challenging connections between human beings and the earth's ecology. The other important question is whether invoking a sacramentality around a broader range of experiences dilutes or diminishes the sacraments of the Church. At the very least, we recognise the value of finding God's grace in the whole of creation, and in naming such experiences as 'sacramentals'.



SCIENTISTS IN CONGREGATIONS