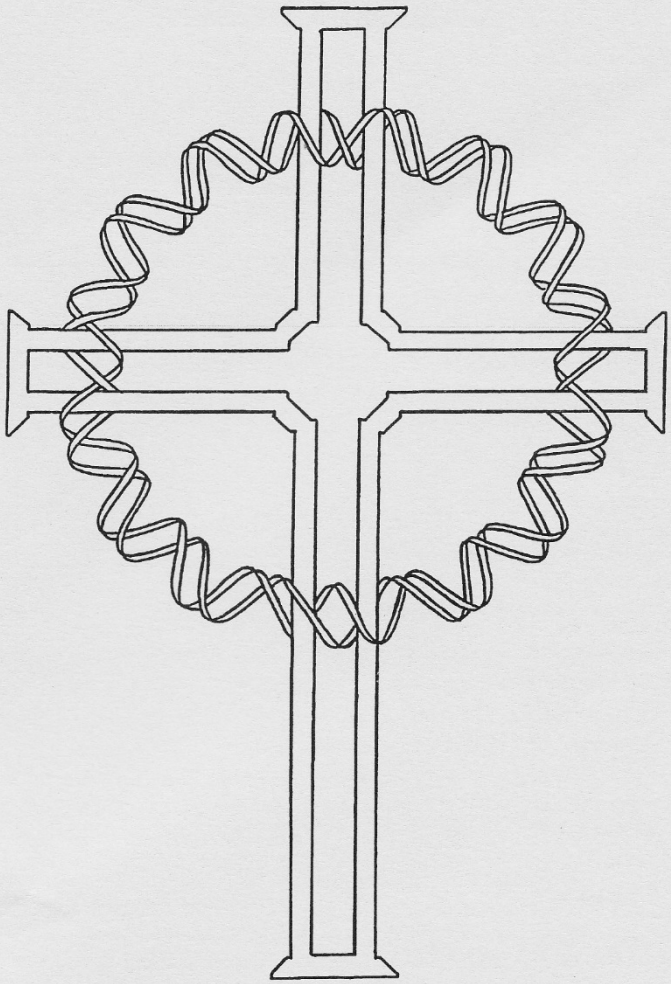
SOCIETY OF ORDAINED SCIENTISTS



BULLETIN

SUMMER 2020

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A Letter from the Editor

I am so pleased to be able to issue a Bulletin to keep us in touch during this strange and challenging time. I guess we are all missing the fellowship and friendship of our various colleagues and more especially the nourishment and strength that we receive from the sacrament of the Eucharist. I so miss saying the Offices with colleagues too. The 'lockdown' has been hard for many of us and my home swithers between being a prison and a cell. Sometimes I have this longing to get out and do something exciting and the restrictions are irksome. At other times I am perfectly happy pursuing various ploys from having more time to listen to music to arranging my stamp collection, and then the house become a cell in which I pray and work and enjoy the space to do the things that I enjoy. I have to say that the 'prison' aspect is more prevalent than that of the 'cell'.

We are very much 'data driven in this Bulletin and we have two major articles: the first from Alistair So-Schoos in Annapolis, USA who has become the Data Scientist for the Church Pension Group. His reflects on the link between data science and priesthood are interesting and informative. There is also a dialogue between the Editor and Alistair which may answer questions that puzzle you.
The second major article shows the results of a survey conducted by Justin Tomkins, an Associate who lives in Poole in Dorset. He says that the work grew out of conversations with friends speaking about their work and their faith, as well as the potential that they see for benefit in the wider world.

If you need more reading matter, then you might be interested in +David Atkinson's new book on the apocalypse of Jesus Christ, or Andrew Bigg's new book entitled ' *Real Divine Insight and Human Consciousness: Opening the Dynamic Stability of a New Creation'.*

As always, I am delighted to receive articles, reviews and other material in which you consider the members will have an interest. Perhaps you might write something over the summer so that I can publish a Bulletin in the Autumn?

With every blessing and my love to you all.
Maureen

From Priesthood to Data Science

[Originally published as an article on LinkedIn in September 2019]

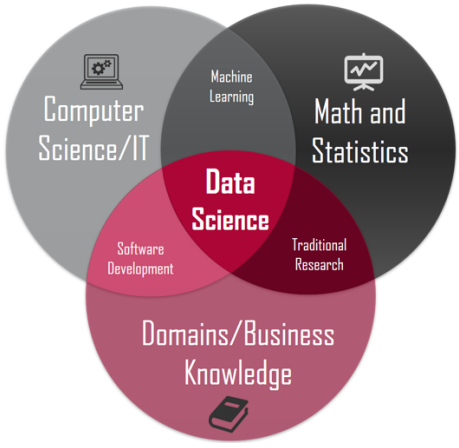
Recently, I experienced a somewhat unconventional career pivot — from ministering in parishes as an Episcopal priest to becoming a data scientist. For those looking from the outside, both the priesthood and data science carry within themselves a certain amount of mystique, with the former bearing a sort of time-tested role for the spiritual needs of humanity, while the latter represents the rapidly evolving digital world that continues to redefine our 21st century lives.

According to the Catechism of the current Book of Common Prayer of the Episcopal Church, "*the ministry of a priest is to represent Christ and his Church, particularly as pastor to the people; to share with the bishop in the overseeing of the Church; to proclaim the Gospel; to administer the sacraments; and to bless and declare pardon in the name of God.*" (BCP, p. 856) The establishment of the Episcopal Church dates back to the founding of the United States of America in 1776. One may argue that the priesthood itself could date back to the founding of Church of England as an autocephalous entity in 1534, or even back to the first century CE, depending on one's theological perspective.

Data science, on the other hand, is a lot younger than the priesthood. In "*A Short History of Data Science*," the author Gil Press dates the conception of data science to 1962 when John W. Tukey wrote in '*The Future of Data Analysis*' that "data analysis is intrinsically an empirical science." (Press, Gil '*A Short History of Data Science*' Forbes Magazine, 28 May 2013)

Perhaps the clearest demarcation of the entrance of Data Science into the limelight of professional discourse was in 2001, when William S. Cleveland published *Data Science: An Action Plan for Expanding the Technical Areas of the Field of Statistics*. As the tools, applications, and frontiers of data science expanded in the ensuing decade, public attention and interest in the field grew, as evidenced by the article '*Data Scientist: The Sexiest Job of the 21st Century*' in the '*Harvard Business Review*' in 2012.

As data scientist for the Church Pension Group, I now practice data science in a realm that is still linked to the functions of the Episcopal Church, particularly in terms of the pension and benefits for its clergy and lay employees, the insurance coverage for church institutions, and the church's publishing business. But my story also illustrates the immense possibilities and promise for the application of data science in most every field of professional endeavour.



As this Venn diagram reveals, one way to conceptualize data science is to see it as the confluence of computer science/IT, math and statistics, and domain/business knowledge. In other words, the practice of data science is decisively interdisciplinary. By combining the theoretical underpinnings of applied mathematics (such as linear algebra for matrix manipulation and differential calculus for implementing deep learning models), together with a new level of automation and scaling (made possible by object-oriented programming languages such as Python and R), and distributed computing

(enhanced by Hadoop, MapReduce, and Spark), the data scientist provides insights and predictive analytics to their specific domain or business.

Data scientists often find themselves having to wear many hats in the organizations where they practice. For example, they need to think like an engineer in defining problems and devising solutions; they also need to make and test hypotheses like a scientist. In addition, they must have the acumen of a business person in order to harness their technical expertise for the greatest impact. In my particular niche of data science practice, apart from embracing this three-fold persona of an engineer, scientist, and businessman, I also apply my knowledge and experience as a priest of the Episcopal Church, especially because the data I work with has so much to do the various dimensions of the ministries and operations of the Episcopal Church.

While a data scientist must have the technical expertise to apply the appropriate coding and statistical know-how in their work environments, the importance of a deep knowledge of the type of human interactions that are central in their business domains cannot be overemphasized. This is because the advancements from machine learning and A.I. are best suited to augment what humans traditionally do, instead of replacing human involvement altogether. Take Siri, or Google Assistant, for instance. As impressive as they are in "understanding" human languages, there are still many levels of nuance and multiple layers of interpretations that they simply cannot catch.

Of course, the nuances in linguistic expressions can be difficult even for native speakers. We often rely on our past experiences to draw inferences when given an unfamiliar expression or text. For machines, if the proper context is not provided in the input data, they will have to rely on their more limited background information, which is not likely to yield desired results.

The vast repertoire of data science toolsets is helping us see and understand the world around us in a new light. As an example, the use of sentiment analysis of Twitter tweets and Facebook feeds from millions of users can provide us with a snapshot of the overall trends of public opinions regarding various issues. But the data science tools themselves are morally neutral. That means, they can be used for good or evil. Understanding the rules and regulations of one's domains is a first step in adhering to an ethical standard in the practice of data science. We must understand both the legal limits and our moral obligations with the data we deal with. Perhaps, in light of that, an informal corporate motto of the data giant, Google, makes perfect sense - "Don't be evil." In my field, we tend to put things in more positive terms, as we call for "the Way of Love."

Although my transformation from parish priest to data scientist may seem like a radical turnabout, I see it rather as a journey in which all my past experiences have evolved, leading me to this liminal space where the gifts of ministry and the promise of data science converge.

Alistair So-Schoos

Disclaimer: The opinions of this article are my own and do not represent the positions of my employer.

INTERVIEW BETWEEN THE EDITOR AND ALISTAIR

Editor: Explain to us what a data scientist is.

Alistair: As the name suggests, a data scientist is a scientist who works with data. But that invites the obvious question – Don't all scientists deal with data?! True, but data scientists are specially trained to extract, transform, and derive meaning out of exponentially increasing amount of data, both structured (e.g., relational spreadsheets) and unstructured (e.g., images, sounds), with efficiency and value for a variety of use cases. Data science research has led to the success of internet search engines – how the results are issued, stored, and fed back to the ecosystem of keywords and websites. When asked about my role, I often describe a data scientist as a business and research professional equipped with the expertise to extract valuable insights from a wide variety of data sources that are

rapidly and exponentially expanding. These insights then help inform decision makers in various industries to set policies and directions for their overall good. Getting these insights to the C-suite requires communication skills that merge the discipline of a scientist and the communication skills of a storyteller. So, really, data science is an interdisciplinary field. For us in the Society of Ordained Scientists, the sacramental priesthood and the priesthood of all believers are not unfamiliar terms. We can liken the use of data by all scientists to the priesthood of all believers and the profession of the data scientist to the sacramental priesthood. They are not mutually exclusive.

Editor: What made you decide to become a data scientist after already having gone from microbiology to the priesthood?

Alistair: Being a member of the Society of Ordained Scientists has given me the affirmation of my vocation as a priest and a scientist. In the early years of the founding of the North American Chapter (2010), I felt really nourished as I practiced my vocation as a parish priest while serving as the chair of the Episcopal Church's Executive Council Committee on Science, Technology, and Faith. In that milieu, my scientific training in microbiology was put to use for the good of the Church. In the last few years, I became drawn to the evolving field of data science. And I found that I was already sort of prepared for this new field, having wrestled with the interpretation of data as a microbiologist. But I didn't know programming languages like Python or R, or the tools of big data analytics using distributed computing platforms such as Hadoop or Spark, or database querying languages such as SQL, and how they can all be harnessed to perform machine learning, deep learning – the building blocks of artificial intelligence. So, I went back to graduate school part-time to get further equipped. At the end of my program, through the introduction of a clergy friend, I learned that a position for data scientist had become available at the Church Pension Group (CPG). And fortunately, both CPG and I discerned a good match in that path. So, my priesthood journey now continues in my role as a data scientist for CPG.

Editor: Is there a discourse between science and faith in data science? If so, what is that space like?

Alistair: Data science, being such a new field, or a newly evolved field, properly speaking, there isn't yet any centralized hierarchy to license practitioners or codify training requirements. Because of that, the times when a large number of data scientists and professionals gather are usually during tech conferences -- venues where faith generally is not discussed. In addition, there are also regional meet-ups for data scientists, both employed and aspiring, where knowledge exchange happens. While I haven't heard of an active science and faith discussion in these data science environments, I do believe that most data scientists are predisposed to the storytelling aspects of faith, they themselves being data storytellers. I actually am more concerned about whether traditional scientists would all welcome data scientists into their hall of fame. But as far as academic research is concerned, there are already some Ph.D. programs specifically for data science, instead of being an offshoot of applied mathematics or statistics. So, data science is a solid new domain in the evolution of scientific thought. And the time is ripe for a conversation between science and faith in data science.

Editor: Why don't you start one then?

Alistair: That is a very good idea.

Alistair So-Schoos

Ten Lessons from Christian Professionals at a Technological Frontline

Introduction

This report describes ten lessons emerging from survey data produced by Christians working professionally in the fields of science, medicine and technology. The data involves over three hundred professionals connected to the Church of England, spread geographically across England, and was completed between the middle of 2019 and early 2020. Details of the research methodology and its roots can be found in the appendix.

This work grew out of a conversation between friends. As I listened to an engineer speak about his work and about his faith, I was encouraged by the potential of his business to impact the environment for good. I was inspired by his commitment to using his God-given gifts for the benefit of others. I was fascinated by his descriptions of the challenges he faced. I was humbled by the recognition that I'd previously known so little about the detail of his professional context. As I have gone on to speak to others, and as I have reflected upon these survey responses, I have been prompted to further encouragement, inspiration, fascination and humility.

As I write, the UK, and very much of the globe, is in lockdown to help fight the spread of the coronavirus, Covid-19. Life is unimaginably different to what might have been recently expected. Who would have predicted, just a few short weeks ago, so many children being home-schooled, so few planes in the sky, and the Archbishop of Canterbury leading an Easter Day service from his kitchen? Our current situation offers a stark reminder that we have only a very limited knowledge of what the future holds. The Bible reveals that Jesus has already achieved the final victory and has begun to establish His Kingdom and new creation. The Bible also reveals that at this point in history, between Jesus' resurrection and His coming again, we have been called to live holy lives in challenging contexts. Yet whilst we have the assured hope of a new heaven and a new earth already secured by the cross and resurrection of Jesus Christ, we do not know the detail of what happens between now and then.

We do not know how technology will shape the world of tomorrow. For most of us, at best, we are still grappling to understand how technology is shaping the world of today! Yet engagement with the world of tomorrow and its technologies is critical if we are to be able to reflect upon how to live holy lives in this next season. A key resource with which to do so is the experience of all those working on scientific, medical and technological frontlines, not least Christian professionals in those fields.

The ten lessons which emerged from this work, described in more detail below, are:

1. Christians are working across the breadth of technological, scientific and medical frontlines
2. Christians can articulate the awesome and inspiring value of their work for society
3. Christians are experiencing complex ethical challenges raised by their work
4. Christians are open to having the wider church pray for their technological workplace
5. Christians can help give our wider society glimpses into our possible technological future
6. We, the wider church, have an untapped resource in our midst
7. We, the wider church, have an opportunity to develop our prayer-life
8. We, the wider church, have an opportunity to teach into these areas
9. We, the wider church, have an opportunity to equip ethical decision-making in society
10. We, the wider church, have an opportunity to further engage with these issues

All data below relates to three hundred and fifteen respondents who completed an online survey and who indicated that they saw themselves working professionally in a field related to science, medicine or technology. (Of these 315 respondents, 313 stated that they saw themselves as having a Christian faith. 307 of these 313 respondents indicated that they currently worship at a local church. The two respondents who stated that they did not see themselves as having a Christian faith nonetheless indicated that they do worship

at a local church. When the description 'Christian' is used within this report it is used to refer to all 315 of these respondents.)

The Ten Lessons

Christians are working across the breadth of technological, scientific and medical frontlines

Respondents came from all ten areas named within the survey itself, as well as from other fields, as shown below (respondents were invited to select ALL areas which applied):

Area of work	No. of respondents working in that area	Proportion
Healthcare	145	46%
Research	98	31%
Education	61	19%
Engineering	59	19%
Information Technology	56	18%
Energy	25	8%
Communications	22	7%
Artificial Intelligence	20	6%
Robotics	12	4%
Transport	10	3%
Other	60	19%

Many of the sixty 'other' responses might have been understood as relating to one of the categories named. For example: medical device development might have been understood to relate to healthcare; and cyber security to information technology. Other areas which related less clearly included animal health care; legal work such as medical law and intellectual property; defence; and environmental work. The word cloud below, in which the size of the named role represents its frequency as a response, illustrates the variety and distribution of respondents' roles:

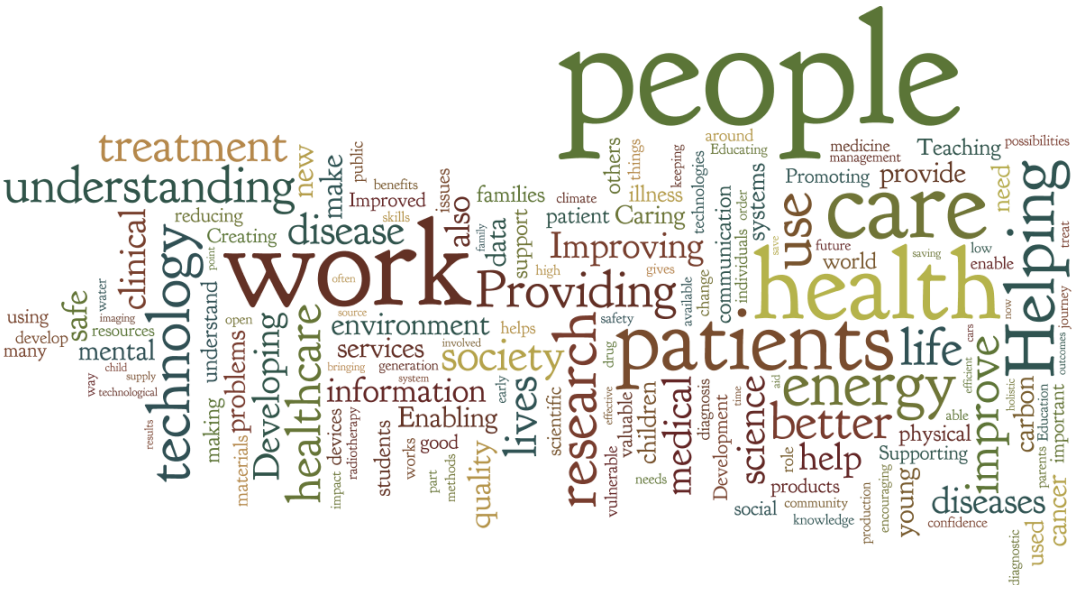
Analysis of the data by specific professional role indicates that the three hundred and fifteen respondents includes the following professional groupings:

Specific role	No. of respondents working in that role	Proportion
Medical Doctor	53 (including 21 consultants and 17 GPs)	17%
Educator within Higher or Further Education	45 (including 24 professors and 9 lecturers)	14%
Manager/Executive/Director	43	14%
Scientist	20	6%
Engineer (not incl. Software Engineer)	16	5%
Nurse including Nurse Practitioner	14	4%
School Teacher	13	4%
Software Engineer	7	2%
Student	5	2%
Other	99	31%
TOTAL	315	

As might be expected, doctors, nurses and teachers are well-represented within these figures but it is also clear that Christians are working professionally across the breadth of technological, scientific and medical frontlines. Even within these roles was huge variety, for example the Engineers included an Electrical Engineer, a Civil Engineer, a Mechanical Engineer, a Petroleum Engineer, an Automotive Design Engineer and a Nuclear Fusion Engineer. The variety within the roles of Medical Doctors, Educators and Managers/Executives/Directors was similarly diverse. Roles of respondents also included Psychologist, Psychotherapist, Dentist, Physiotherapist, Optometrist, Occupational Therapist and Veterinary Surgeon. Eighteen respondents indicated that they had retired from a role which they named. Several of these respondents indicated other scientific, medical or technological roles in which they were now working. All of them indicated that they saw themselves as working professionally in one of these fields, although it would seem that for at least some of these respondents that was through a meaningful sense of professional identity enduring beyond retirement.

Christians can articulate the awesome and inspiring value of their work for society

Responses to the question 'What aspect of your work do you see as being most valuable for society and why?' revealed a clear ability to articulate the value of the professional work being done across this diverse spread of technological, scientific and medical frontlines. This value included the significance of healing and education but also pointed to the importance of business, industry, energy and the environment. A word cloud of these responses reveals the significance of 'people' to the way that respondents thought about their work. Other words which stand out include 'care', 'helping', 'improving', 'enabling', 'developing' and 'lives' as well as those words such as 'work' and 'technology' which relate to the framework of the survey itself.



The quotes below are intended to offer a glimpse of the beauty with which respondents understood the value of their work.

"The obvious answer is curing disease but in some ways the alleviation of suffering may be more important, and it certainly gives me more satisfaction"

General Practitioner

"Helping the next generation understand science"

Physics Teacher

"I make compounds which secure the world's food supply"

Research Chemist

"Revenue generating to provide jobs for others"

Project Director

"Protecting lives through helping develop technology that will prevent terrorist actions"

Engineering Manager

"Helping to reduce carbon emissions in the fight against climate change"

Consultant Energy Manager

These quotes have been chosen to reveal something of the diversity of these workplace contexts and the specific roles which enable them to function:

"Accurately diagnosing leukaemia sub types as certain ones now have a very high cure rate"

Advanced Practitioner Haematology

"Helping mothers to breastfeed"

Healthcare Worker

"Aiming to discover more about the way our solar system works via simulations. This will aid in future space exploration and also understanding how to protect our own planet"

PhD Student in Mathematics

"Identification and typing of specific strains of bacteria so their spread can be documented and traced - know your enemy"

Bacteriologist

"Enabling better road traffic flow and safety - Work I do supports the network that runs motorway signs"

Network Engineer

Christians are experiencing complex ethical challenges raised by their work

Whilst the value of their professional work is described in the previous section, respondents face challenges too. Their responses to the question: 'If possible, please name a significant ethical question, raised by your area of work, which society needs to consider?' reveals something of these workplace challenges.

Some of the issues named, such as those relating to the start or end of life, indicate that hot topics of ethical debate from the past continue to challenge today's professionals. Exploration of other areas of ethical concern, such as artificial intelligence (AI), was previously largely confined within the contexts of fiction and the imagination. These are now breaking out into everyday workplace decision-making. Similarly, exponential growth in our ability to collect data raises new ethical issues.

As workplaces have always faced ethical issues relating to equity and resources, so financial questions arise in these responses too. Questions around climate change, energy and the environment represent another large ethical area which is being wrestled with, particularly by those working on the frontlines of energy use and provision. Other key areas of ethical challenge revealed by these responses include genetic engineering and animal welfare.

The word cloud of responses to this question indicates the centrality of people and life to these ethical challenges:

Some responses, such as the succinct statement below, highlight the realities of being personally involved in one of these professional frontlines:

"I used animals in my research"

Research Assistant

Other responses, such as the question below, challenge us all, whether or not we are involved professionally, and indeed whether or not we are parents ourselves:

"How much data should be allowed to be collected about our children's activities in school?"

Researcher

Nonetheless, even these global issues can have a very personal feel for those meeting them 'up close and personal' within the work place:
"Issues around pressure on doctors to agree to euthanasia"

Consultant Anaesthetist

The quotes below have been selected, and grouped into categories, in an attempt to give a flavour of the diverse and complex ethical challenges raised by the work of these professionals.

The start or end of life
"If we can detect Down's Syndrome accurately during early pregnancy will that lead to no children having Down's Syndrome in the future?"

Genetic Technologist

"I work in Palliative Care so there are many! Society's paradoxical views on dying and death and the many issues that arise from this are so complex ethically. At lot comes down to what can we do vs. what should we do in situations no one would choose to be in and relate to what seems like an increasing belief that humans can and should control all areas of life by their wants rather than have to live with uncertainty."

Clinical Academic

Artificial intelligence and data
"Can AI systems be moral and fair in how they support decisions that impact human beings (e.g. HR recruitment)?"

Professor of Artificial Intelligence and Robotics

"Though we have not faced it yet, AI in medicine is already with us but it will hit us in the face soon...."

Retired Physician

"The technology industry is driving the creation of devices and services designed to collect our personal data; what we buy, what we view online, what we talk about in our own home. Social media platforms, smart watches, phones, tablets, Alexa-like "assistants", and so on. People's privacy is the commodity in this new boom industry. Do we really want to build a society where people's privacy is monetized?"

Principal Software Engineer

Equity, resources and finance
"How much money as a society are we willing to spend on the care of severely disabled children and their future care and housing?"

Consultant Paediatric Orthopaedic Surgeon

"For sustainable resource use, we all need to consume less stuff. But products are becoming ever more uneconomic to repair. We'll need to re-imagine product design and lifecycles, and how we can still make it economically attractive for product-manufacturing businesses to remain in business in a global capitalist market."

Honorary Visiting Professor

"How should money available be best divided between patients?"

Medical Physicist

Climate Change, Energy and the Environment
"I believe current generations have a duty of care for future generations; we need to make tough decisions now about investment and lifestyle changes that will have a big impact on the future climate i.e. we need to make relatively small changes now to our lifestyle and commit to investing a relatively small proportion of our

wealth; otherwise future generations will be faced with much larger costs and lifestyle impact, and much larger inequalities between developed and developing countries."

Nuclear Fusion Engineer

"Too many disposable items in and around the Operating Theatre"

Healthcare Worker

"Traditional "oil and gas" companies are often seen as part of the problem when it comes to greenhouse gas emissions. The company I work for is changing dramatically and investing heavily in new energies, and I believe we will play a critical part in enabling the energy transition both by developing new technologies and being a powerful advocate for faster change with governments and other critical stakeholders. However, many people do not understand the complexities of the energy challenge we face and are divesting from companies such as the one I work for in the belief this will help."

Manager External Research Partnerships

"The systems (for making superconducting magnets for MRI scanners) require lots of electricity and use liquid helium. How should we generate that electricity sustainably? The helium comes from millennia of radioactive decay and is a fast diminishing resource as it is too light to be bound in Earth's atmosphere by gravity. How should we manage a resource such as this?"

Manufacturing Engineering Manager

Some of the other ethical issues named

"How far should we tolerate genetic manipulation of humans in an effort to treat disease?"

Professor of Pharmacology

"Welfare conditions for farmed animals"

Quality Assurance Manager

"The effects of our "always connected" society on people, particularly child development."

Senior Software Engineer

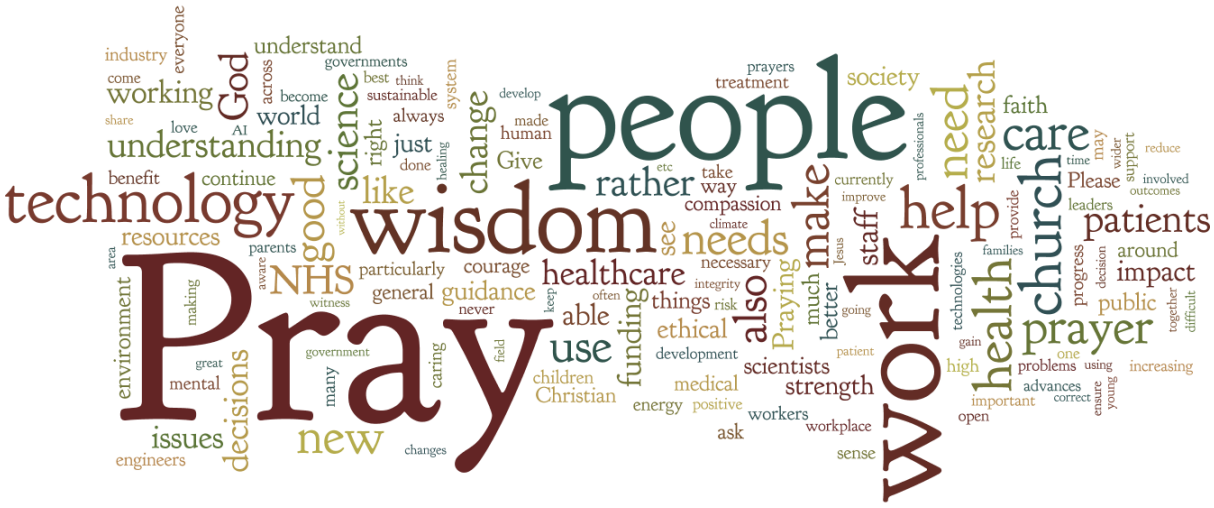
While the ethical-wrestling of most respondents was focused around one of these areas, others recognised that they needed to wrestle across a very broad spectrum of issues:

"Major ethical questions arise in the teaching of controversial areas such as new gene technology, nuclear power, climate change and global warming."

Science Teacher

Christians are very open to having the wider church pray for their technological workplace

The word cloud of responses to the question: "How would you like the Church to be praying for your area of work, now and in the future?" reveals, once again, the centrality of people. As well as the context of work and technology, the word cloud also highlights the call for wisdom within these prayer requests:



The desire for **wisdom** was a key theme spreading across the range of professional contexts, and often gave glimpses of the personal cost involved in serving on these various frontlines:
"I need my "daily bread" of wisdom, to manage complexity of medical problems, quantity of perceived need, within ever (more) *complex regulatory and procedural systems"*

General Practitioner

"For wisdom in dealing with ethical issues in the field of reproductive medicine in every day practice"
Consultant in Gynaecology and Reproductive Medicine

"Pray for wisdom, love and guidance from the Holy Spirit in the way energy is developed and shared across the Globe and between nations"

Senior Mechanical Engineer (now retired)

"Give me strength to care for the women, care for my staff and to help me when I get stressed with all the administrative tasks I need to do. Give me wisdom, understanding and patience to deal with difficult staff members."

Senior Nursing Sister & Colposcopist

"Wisdom in dealing with the mental well-being of pupils"

Chemistry Teacher/Technician

The subject of **strength** also came up frequently within responses to the question of prayer requests. Again, the responses give a sense of the cost of serving in these challenging contexts.
"I would like a prayer of strength for the types of illness and injury we witness"

Nurse - Surgical Services Manager

"Strength for me"

Consultant Clinical Scientist, Toxicology

"Strength to recognise what a commercial company should be doing to produce the best product whilst also treating its end users fairly and with respect"

Mechanical Design Manager

Many respondents recognised the significance of **leadership** to their professional roles and desired prayer for God's equipping as they, and others, faced the demands of leadership:
"That we will be able to develop new and better ways to diagnose disease. That we will be able to identify things at earlier stages with new tests and technology. For clear leadership not guided by greed and money but with the interests of patients and service users at the heart of all we do."

Advanced Practice Nuclear Medicine Technologist

"For those projects that are geared more toward civil work, and healing our relationship with creation to take precedence over military projects. For a change in heart of industry leadership."

Performance and Aerothermal Engineering Function Head

"Opportunities to evangelise. To be God's ambassadors when leading others."

IT Manager

The need for **compassion** in the workplace, particularly within healthcare, was also felt powerfully by respondents:
"For compassionate care to continue ... currently being swamped by paperwork and regulation which can reduce use of good sense."

Nurse Manager (aka Ward Sister)

"To continue to do business with compassion and integrity."

Nuclear Power Plant Performance Specialist

"I would like the church to pray for all working in healthcare, that we may seek to continually open our minds and hearts to the people we serve - that we may become ever more compassionate."

Junior Doctor

The **technological context** of today's workplaces was another theme of responses to the question of prayer.
"Wisdom to discern how to use technology"

Policy Officer

"Pray for the technology industry to turn the talent and experience of its workforce to solving the world's most important problems, rather than new devices and services to farm our privacy, and automation, and artificial intelligence, to take people's jobs."

Principal Software Engineer

"Give thanks that technology brings folk together, and pray that it will increasingly be secured against negative use."

Professor of Computer Engineering

"For more scientists and technologists to take seriously the impact that AI is having on society"

Professor of Artificial Intelligence and Robotics

"For technology to empower rather than eclipse our humanity, and for artificial intelligence to complement our human intelligence"

Chief Commercial Officer

"That rampant progress in robotics can be well managed - particularly in respect to employment opportunities and equality of access … I don't dispute the overwhelming long term good of this technology; only society's capacity to handle the pace of change."

Chief Technology Officer

"Just that technology can develop to enhance life"

Director and Fellow

"That we never raise the status of technology to the status of each other, and absolutely never revere technology"

Process Analyst

"It's not what you can do but what you should do. Medical science is moving very quickly and is being influenced more and more by what can be done rather than what should be."

Chartered Physiotherapist

Christians can help give our wider society glimpses into our possible technological future

Survey responses to two questions on the next decade reveal fascinating glimpses into our possible technological future. Those questions were: 'How do you see your area of work developing in the next decade?' and 'How do you see your area of work changing society in the next decade?' Responses to these questions will be taken together. The word cloud on these responses indicates the context of people, technology, work and society as well as health. Looking more closely, words of change are apparent such as greater, less, increase, reduce and becoming. The word 'hopefully' is also visible, reflecting something of the spectrum of hopes and fears underlying these responses.

Depending upon our character, our temperament and our situation when asked, some of us will tend to think more positively about the future and others more negatively. For the purposes of seeking to avoid that background noise of personal temperament from drowning out the insights available through professional experience, quotes will be offered by areas of insight, rather than by degree of utopian optimism or dystopian despair. Those insights include: healthcare; climate change, energy and the environment; data, artificial intelligence and communications; robotics, automation and unemployment; transport; food; and other social issues.

Healthcare in the next decade

The image of future healthcare which emerges through these responses is of increased focus on patient responsibility; personalised medicine; pressures on healthcare provision through politics, finance and unrealistic expectations; possible antibiotic resistance; and new medical technologies and their consequences. The following quotes offer some glimpses into these possible futures:

Patient responsibility

"Hopefully people will … make lifestyle changes to reduce their risk of cancer, eg *stop smoking, exercise, lose weight, don't eat smoked foods or red meat"*

Specialist Registrar Doctor

"Home use diagnostic tests to monitor health; Individuals taking more responsibility for their own health"

Research Fellow

Personalised medicine

"Accurately identifying genetic defects and establishing personalised medicine"

Advanced Practitioner Haematology

"Healthcare will be tailored to reduce the impact of genetic conditions upon people's health"

Genetic Technologist

"We will understand better ways of tailoring drugs to reduce side effects"

Professor of Pharmacology

Pressures on healthcare provision through politics, finance and unrealistic expectations

"Ever increasing demand on staff with less and less funding and resources. Ever increasing unrealistic expectation from humans to save all life - sense of failure is cast to staff if sadly we can't save everyone."

Nurse - Surgical Services Manager

"More open discussions about options, and discussions about what the NHS can afford. We cannot provide everything to everyone."

Renal Consultant

"More pressure from the economics of healthcare and an aging population"

Consultant Anaesthetist

"I think we already have an expectation of perfection in health that we did not used to have. It will be interesting to see what happens to this!"

General Practitioner

"More advances in treatment but with less availability/funding to those most in need."

Dentist

Possible antibiotic resistance

"More awareness of the global problem (of antimicrobial resistance) and responsible use of antibiotics."

Pharmacist

"Hopefully we will persuade people to not take antibiotics un-necessarily. If not then society will take a massive change for the worse"

Product Manager (Clinical Microbiology)

New medical technologies and their consequences

"With massive advances in the ability to genetically manipulate any cell-type it will lead to many treatments being evaluated in cells rather than animals and personal medicine whereby your own cells are manipulated to treat a disease or reduce susceptibility to disease … a lack of regulation may lead to 'designer' babies where germ-line cells have been genetically altered for a certain trait that is not disease related."

Senior Microbiologist

"Genome editing - changing and modifying the genetic make-up"

Principal Clinical Scientist

"The rise of genetically modified mosquitoes may fundamentally change how we look at mosquito borne viral diseases. I think we will also have a greater understanding of how viruses interact with the host potentially leading to some breakthroughs in treating viral diseases. Being able to treat viral disease would be similar to the first development of antibiotics. It would significantly change the healthcare landscape."

Reader in Vector Ecology - Academic Researcher

"Helping more couples to have children using their own genetic material"

Consultant in Gynaecology and Reproductive Medicine

Climate change, Energy and the Environment

Responses in this area indicate a greater focus upon tackling climate change, of developments in nuclear fusion, and of wide-ranging environmental challenges. The following quotes offer some examples of these glimpses into possible futures:

"Greater awareness of climate change and actions that individuals can take to reduce carbon emissions."

Energy Consultant

"Dramatically. Engineering will provide copious alternative power sources; it will find ways of averting the climate apocalypse; it will make our lives fuller, busier and with much reduced drudgery; and it will increase the pressure on us to tackle the endless increase in our population."

Fellow of the Institute of Mechanical Engineers

"I hope we will gradually provide solutions to the key challenges in realising fusion power … raising awareness of the importance of what we do and the huge potential fusion has for combatting climate change"

Nuclear Fusion Engineer

"Much of the UK water infrastructure is old and needs replacing. Over the next decade the existing infrastructure will be challenged and stretched in the context of increasing customer expectations and reducing costs. There will be an increased focus on drinking water as a precious resource rather than a commodity that people see as cheap and which they can waste easily."

Technical Director (Water Quality and Treatment)

"Society will need to be less consumeristic to reduce their environmental impact - whether it can will be the test."

Consultant Energy Manager

Data, Artificial Intelligence and Communications

The picture of data and Artificial Intelligence in the next decade which emerges through these responses is one of developing technologies continuing to affect broad areas of life and work and to raise further questions about privacy. The following quotes offer some examples of these glimpses into possible futures:

"More autonomous through the use of AI and machine learning. More movement from traditional conflict towards the cyber domain. Ensuring our defence forces and law enforcement agencies are equipped with the necessary technology to prevent terrorism and cyber-crime."

Engineering Manager

"Tremendous changes: Today, we would say, "I looked it up on the internet and it said X is likely to (be) *the answer." In the next decade, we will say, "My AI told me that X is the answer.""*

Commercial Director

"The next decade in my area is already in motion, so there is little guesswork involved … we are now building … devices and services to monetize people's privacy, and automation and artificial intelligence that will ultimately take their jobs … My industry wants as many people as possible, regardless of age or vulnerability, connected by devices that are gathering their data so it can be monetized. The legal legislation is so far behind what the technology is going to be doing within ten years, and most lay-people don't fully understand what we're talking about here when we say "data" - to be clear, we are talking about tracking location, recording and parsing conversation in the family home, tracking internet usage, artificial intelligence assistants talking to young or vulnerable members of society about products they might like."

Principal Software Engineer

"The main developments are embodied in "5G" - which potentially will focus more on automation (in a range of areas) than on traditional telecommunications. 5G has the potential to give rise to vast changes, much as mobile phones have already done over the past decade or two - but probably in ways that are unforeseeable!"

Professor of Communications (Technology)

Robotics, automation and unemployment

The picture of robotics, automation and unemployment in the next decade which emerges through these responses is one of greater overall automation, though maybe with such change being harder to imagine within our own specific fields. The following quotes offer some examples of these glimpses into possible futures:

"Smarter AI assistants. More unemployment for the unskilled."

Managing Director

"More automation and robotics, with the necessary human work being carried out by low cost countries. Better knowledge management; decision tree analysis automation with minimal human checks; diagnosis carried out by AI and being quickly validated by humans; more operations carried out by robots; artificial organ development using 3D printing technology"

Delivery Excellence Regional Lead

"It is estimated that half of the jobs that my current students will do in their life don't exist yet. We will need to move to a skills - rather than content - based education to prepare them for that."

Science Teacher

"AI and ML (Machine Learning*) will lead to a change in the job market in the same way the introduction of the computer spreadsheet radically changed accountancy and banking jobs. We must be careful not to take a Luddite approach. We will be able to make the internet safer to use, but we need to make sure this does not reduce free speech. Some jobs will be automated releasing labour for other tasks."*

Technical Director

"I'm in a rare area that definitely won't be automated. My area will be perhaps the most important in helping develop away from a consumerist, oil burning society - if the wider community wakes up and funds it. We will either assist in humanity's downfall, or have the answers to fix the base issues in society."

Control Systems Engineer (Robotics)

"We are seeking to equip AI systems and robots with a degree of moral competence, so that they are able to recognise what behaviours are appropriate and not appropriate when interacting with people in social contexts and at work. I hope that it will enable society to become aware of the risks and understand the limitations of the technology, and appreciate when they should and when they should not trust these systems."

Professor of Artificial Intelligence and Robotics

Transport

The emerging picture of transport in the next decade is of green fuels and in particular electric cars. The following quotes offer some examples of these glimpses into possible futures:

"More focus on driverless cars and electric cars. Reduction of use in fossil fuel"

Process Improvement Specialist (Major Car Manufacturer)

"Use of fuel cell energy (output is H_2O) and increased use of electric vehicles and smart traffic systems. I'm not sure my expertise can change society, I think there needs to be a societal desire to reduce carbon emissions from vehicles and increase use of public transport"

Bid Manager - Major Projects

"Overcoming the delays caused by recharging the battery (of an electric car)*, which obviously takes longer than filling a vehicle with diesel/petrol."*

Test Engineer

"Rapidly increased electrification of passenger vehicles in some markets"

Principal Engineer (Automotive Design Engineer)

"It will become much more involved with morality and ethics than it ever has been previously. Hopefully technology like self-driving cars and home automation will help people who may struggle to be independent at the moment to become more independent and stay independent for longer."

Hardware Engineer

Food

The emerging picture of food in the next decade is of the challenge of producing global food supplies with markedly differing senses of optimism and pessimism about how far that will be possible. The following quotes offer some examples of these glimpses into possible futures:

"Hopefully better food and medicine in developing countries"

Retired Teacher / former Researcher

"Food will become more scarce in many parts of the world. Food production will become increasingly unreliable as the climate crisis worsens. Informing society of the problems and unsustainability associated with our current food production chain"

Senior Scientist

"Changing practices in how crops are grown and ensuring that there is enough food for a growing population. Discussions around food waste and food miles"

University Lecturer

"Greater use of preventative vaccination rather than treatment. Healthier farm stock passing into the food chain"

Quality Assurance Manager

Other social issues

Another issue which emerged through responses to these two questions on the next decade was of future levels of personal interaction. Many respondents saw less personal contact as inevitable, though another pointed to the role of the church in countering any such developments:

"Less and less face to face contact with patients. Not necessarily a good thing"

Chartered Physiotherapist

"An inevitable drift away from interpersonal relationships - personal and professional"

Clinical Safety Consultant - Digital Health

"Caring supportive communities, taking responsibility in good neighbour care through the local church"

Registered Nurse, Parish Nurse

Another theme that respondents pointed to was the pace of future developments:

"Exponential growth"

Policy Officer

"We want to increase the productivity of medicinal chemistry (needed for early stage drug discovery) by a factor of at least ten"

Professor of Chemical Biology

"The power of computing doubles every 18 months so the possibilities are endless. Staying abreast of the tech is a constant challenge … pretty much everything is online and so it's easy to treat everything as a commodity and to not actually interact face to face"

Computer IT Manager

"I work in internet video transmission technology, so it feels the change has already happened."

Senior Software Engineer

Other respondents reflected upon positive and negative forces on our future society, with varying degrees of hope:

"Creating more interactive websites and mobile apps. Providing oases of positive experiences that encourage the visitor to think about their life and where following Christ might lead"

Web Developer

"Increased support for the biochemical model of homo sapiens. Diminished appreciation of spiritual aspects of living, the immortal human soul or the sacredness of an individual person."

Junior NHS doctor

"The games we will see will always reflect the society. Just like films. They will become more violent, critical of faith and religious people, always painting them in a negative light. I don't want to be a part of something like that."

3D Artist

"I hope we will become more willing to donate kidneys to those who are outside of our families … If there were more altruistic donors people would feel safer giving away organs, knowing that their loved ones would receive another if ever needed. We need a greater understanding of the safety of kidney donation and transplant in black and other minority populations, who are disadvantaged by lower rates of deceased and live kidney donation"

Hospital Doctor / Consultant

"I fear IT is already in the hands of political manipulators. It will help rich sociopaths to undermine democracies and by misinformation create economic chaos."

Change Manager (now retired)

"Increasing productivity, giving people more 'free' time. That those of us with the power to code, will be asked to make far reaching decisions with no accountability"

Senior Software Engineer

We, the wider church, have an untapped resource in our midst

As evidenced in the first five sections of this report, Christians are carrying out valuable work across the breadth of technological, scientific and medical frontlines. Those professionals are facing ethical challenges, are open to being prayed for, and they offer glimpses of our technological future.

All of us in society face questions and challenges which are posed by our technological contexts. These might include:

Would it help me to be more discerning in my own engagement with technology?

How, if at all, do I feel prompted to help shape our social engagement with technology?

What does it mean to be human in our technological world?

How is society, and how am I, helping children to develop in our technological contexts?

Are there technological resources which are currently under-utilised by me and/or by society?

Are there technological resources, which require further boundaries around their use by me and/or by society?

What are the impacts of our technological contexts upon any who are vulnerable or disadvantaged in our society, both nearby and further afield?

Unless the Church engages with these issues, society will be unable to draw upon any insights which the Church may have to offer. The Church is well-placed to offer theological insights which have been shaped in the past. Rich theological veins such as those exploring what it means to be human are already available to be applied to our technological contexts of today and tomorrow. Nonetheless, a further resource is available within the Church, which might be offered for the benefit of our wider society. That resource is the lived experience of Christians working at the contemporary frontlines of science, medicine and technology.

If the Church is to wrestle with issues of technological engagement to our full potential, we will draw upon the wisdom and the insights of those working in the fields of science, medicine and technology. Such engagement will require thoughtful and prayerful discernment. We may need to negotiate a path between fearful neglect of technological gifts on one side, and naïve blindness to technological pitfalls on the other. Yet unless our technological engagement is influenced by the insights of all those whom God has called to serve on these various frontlines, we will be seeking to discern with one hand of our corporate body tied behind our back.

We, the wider church, have an opportunity to develop our prayer-life

As section 4 of this report has revealed, respondents have named numerous issues for which we, the wider church, might pray. Of the 315 professionals whose responses provide the data for this report, all but 9 gave some response to the question: 'How would you like the Church to be praying for your area of work, now and in the future?' Of the 306 responses:

Two were 'N/A'
One was 'Not sure if that would be of help'
Four were simply 'Yes'
One was 'ok'
One was 'any prayer is useful'
Three commented on the question (as shown below)

"Controversially I would prefer the Church leapt out of their pews and took action to reduce their emissions rather than pray!"

Consultant Energy Manager

"I think we don't need just prayer, we need the church body to be aware of possible outcomes"

Senior Software Engineer

"Never mind how - it would be good if it did so at all."

Section Head (now retired)

The remaining 294 respondents, all offered ideas for topics or ways of praying. Together with the four respondents replying 'Yes', the one stating that 'any prayer is useful' and the response above including the phrase 'never mind how', that makes 300 out of the 315 respondents, or 95%, actively encouraging prayer for these various professional frontlines.

The three quotes below offer further insight into the significance of the Church responding to this call to pray:

"I'd love the Church to be praying for me in an informed way recognising that given how much of my week is at work this is where I am a witness. I was saddened recently when another doctor was going abroad to do medical charity work for a week: this prompted the church to specially set aside time to pray for him but they have never asked anything about how to pray for his actually much harder 'normal' work in a hospital here"

Clinical Academic

"I would like the church to pray for me and my work to ask God to help me make these ethical dilemma decisions, help me make the correct one and then to give me peace with my choice and contentment with the decisions I make"

Advanced Nurse Practitioner

"More widely, that the Church engages actively and humbly with science, seeing it as a vital element of discipleship rather than offering ill-informed responses to new and existing developments"

Professor, Physicist

We, the wider church, have an opportunity to teach into these areas

In response to the question 'Please indicate which, if any, of these issues relating to faith and technology are of interest to you', 189 respondents, exactly 60% of the total, expressed interest in 'Church teaching on these issues'. Church leaders and professionals from a technological frontline might work in partnership to plan and deliver such teaching. Many responses to the question 'Are there any other comments relating to your area of work which you think it would be helpful for the Church and society to consider as we look towards the future?' highlight some possible areas for such teaching:

"AI and robot technology raise important questions about what it means to be human which we need to address."

Professor of Artificial Intelligence and Robotics

"Technology is here to stay, for better or worse. Perhaps help people to understand that it is neither good, nor bad in itself, rather it's the uses to which it's put that will impact people's lives."

Non-Functional Testing Consultant

"People often comment when an animal is put to sleep how they wish that was available for humans. While I totally think this option is right for many pets, in society there is becoming more of a tendency for the distinctive nature of humans not to be recognised."

Veterinary Surgeon

"This (Aerospace) *is, in my opinion, a hard industry sector for* (people) *of faith. There are hard questions about what is the boundary between good Godly work, and not. This will continue to be the case, and I think the church grappling with these issues would be a great support."*

Performance and Aerothermal Engineering Function Head

"We need to grapple better with explaining why we do what we do in biomedical research. And the church needs to see and support it as part of the Christian mandate to care and to heal. Medicine as a part of God's charge of stewardship."

Research Assistant

"There's the whole question of human vs machine with regard to automation, and what that means for certain jobs and skills in the future."

Research Software Engineer

"It would be good to see the church contend more with ideas in science before they become outcomes that the church needs to catch up on e.g. AI."

Engineer

"Key ethical questions around beginning and end of life, genetics and human-machine interface"

General Practitioner

"We need to consider how we control the use of private information in this brave new world."

IT Consultant

"Need to address the perception that religion and science are opposed"

Product Development Manager

We, the wider church, have an opportunity to equip ethical decision-making in society

In response to the question 'Please indicate which, if any, of these issues relating to faith and technology are of interest to you', 215 respondents, over 68% of the total, expressed interest in 'Ethical decision-making in society'.

Church teaching has a link with ethical decision-making, and as the previous section makes clear, ethical issues might comprise a key element of such teaching. Nonetheless, as revealed in other responses to the question 'Are there any other comments relating to your area of work which you think it would be helpful for the Church and society to consider as we look towards the future?' there are other possible means of ethical engagement. The quotes below indicate some of these possibilities:

"Become an Eco Church! Be an example! Care for God's creation and show it respect."

Reader in Life Sciences

"In the past God has spoken in various ways and through various means. My feeling is that today He is speaking through an autistic teenager from Sweden. Climate change is the number 1 pressing moral and social issue facing humanity at the moment, yet I feel the church is lagging behind, rather than leading, the necessary response."

University Research Fellow

"With viral diseases the rise in vaccine controversy and lack of uptake of vaccines is something the church should be active in addressing. This is an issue that transcends class and wealth and the rise in individualism has led to a serious lack of concern for the most vulnerable among us."

Reader in Vector Ecology - Academic Researcher

"Not all video games are bad but it is an extremely important method of storytelling and communicating truths. Kids are being confronted with real moral and ethical dilemmas as choice and the complexity of choice in games … are growing exponentially. There needs to be a Christian influence in this. We need to create stories, allegories that reflect the biblical truth we hold. They need to reflect what we intrinsically know as right and wrong and uphold those unwaveringly. Children are confronted with extremely hard dilemmas that are being painted as something simple, such as "do I kill this player?" It's so trivial in most games but in real life, it's far from it. Growing technology will … make the distinction more difficult."

3D Artist

"How can the church support/mentor scientists and medics working in such 'grey' areas so they can maintain integrity in their work, using their gifts, without compromising on their faith?"

Consultant in Paediatric Inherited Metabolic Medicine

"The church must take a lead - by example, in campaigning, and in ensuring its own house is in order."

Educator, Sustainability Consultant

"A way of tying together the increasingly fragmented delivery of social care, medical care and criminal justice."

Consultant Clinical Scientist, Toxicology

"Nurturing families in all their forms. Standing up for the rights of women and ensuring their voices are heard"

Maternity Governance Manager

"Look at every new development in how it affects the disabled and the marginalised"

Adviser on Light Sensitivity

"Ways to ensure a better understanding of what surveillance is now taking place and how its use can influence our lives."

Chief Physicist

"At present, whether or not a new drug/therapy should be made available on the NHS is decided by a panel of experts (NICE). Is this the best way for these life-changing decisions to be made?"

Senior Lecturer in Biochemistry

"My activities generate a certain amount of hazardous waste. What controls should society insist on to ensure such waste is handled and disposed of in a safe and environmentally friendly way?"

Materials Scientist

"There will be limits where even if a problem can be solved from an engineering point of view, ethically it might not be a good idea to solve it. How do we identify these situations?"

Hardware Engineer

"Increasingly technology seems to be driving us to be more individual with fewer shared experiences. As a family we rarely watch the TV together. Are there ways in which technology can bring us together, rather than drive us apart?"

Research Scientist

We, the wider church, have an opportunity to further engage with these issues

As well as church teaching and ethical decision-making in society, there were other possible responses to the question, 'Please indicate which, if any, of these issues relating to faith and technology are of interest to you'. These reveal a number of other areas within which the wider church has tremendous potential to engage. The table below shows how many respondents expressed an interest in each one:

Issue	**No. of respondents expressing interest**	**Proportion**
Church Teaching on these issues	189	60%
Employment/Unemployment	65	21%
Environmental issues	176	56%
Ethical decision-making in society	215	68%
Legal issues	45	14%
Medical issues	145	46%
Prayer for those working professionally in these fields	142	45%
Other	20	6%

Some of the 'other' interests named were:

"Avoiding unnecessary science-faith conflicts, such as creation vs evolution."

Professor of Computer Engineering

"Church attitudes to science and technology and pastoral support for those working in these fields"

Historian of Science and Technology

"Encouraging young people from diverse backgrounds to pursue science. Science poses tough problems and we need diverse and creative ideas to solve them!"

Postdoctoral Research Fellow

"Increased automation and loss of human skills"

Technical Assessor (Construction Materials Science)

Afterword

This report is intended to be a challenge. It seeks to challenge us, the wider church, to help all professionals working on these frontlines, particularly Christians, that they may be resourced and equipped to work there well for the benefit of others. It comes with the desire to be part of the wider church engaging well with these questions, and growing in knowledge and obedience of how we need to be praying, teaching and serving in these contexts.

This report is also intended to be an encouragement. It comes with a deep sense of appreciation for all those professionals working on these frontlines on behalf of the rest of us. It comes with particular gratitude to all Christians doing so with a desire to serve Jesus through that work and it comes with a desire to express solidarity alongside you and a desire that you know that you do not serve alone. I pray that we, the wider church, will grow in our ability to stand alongside you in prayer, that you may work prayerfully to help us shape a society which honours Jesus and which is for the good of all, not least those who are most vulnerable or in need.

Appendix 1 – Research Methodology

The questions comprising this survey grew out of a small number of conversations with Christians working professionally in the fields of science, medicine and technology. Those conversations in turn, grew out of a project entitled 'Faith, Technology and Tomorrow' which ran in a local church, St Mary's, Longfleet, Poole, within the Salisbury diocese, as part of the 'Scientists in Congregations' project. I am grateful to Joshua Naylor, Revd Canon Andrew Perry and to all involved in that local and wider work for their partnership and support. Those conversations indicated that the first five findings of this report were true, and prompted me to test that hypothesis through engagement with a greater number of professionals.

Accessing the insights of a wider group of professionals was carried out through emailing over three thousand Church of England priests working in English dioceses. Those clergy were asked if they were willing to forward an invitation to anyone in their congregation working in science, medicine or technology. That invitation was worded as follows:

Invitation to Christians working in science, medicine or technology:

We'd really value hearing your voice. Will you please complete a short survey, likely to take no more than five minutes, in order for the wider church to be able to draw upon your wisdom as we all seek to engage well with issues of technology? This national work has grown out of the local 'Faith, Technology and Tomorrow' project which we ran in St Mary's Church, Longfleet in Poole and the survey is available via that church website and the link below …

Clergy were selected on the basis of being a point-leader within a parish and thus those in the roles of Vicar, Rector, Team Vicar, Team Rector and Priest-in-Charge were contacted but not Curates, Bishops, Archdeacons, etc. Clergy were contacted from most but not all English dioceses, and represented a broad geographical spread across the country.

The survey comprised the following questions:

1. Do you see yourself as working in a field related to science, medicine or technology? Yes/No
2. Which of these areas of science, medicine and technology best describes the fields in which you work? Please select all that apply. (Options: Artificial Intelligence; Communications; Education; Energy; Engineering; Healthcare; Information Technology; Research; Robotics; Transport; Other (please specify))
3. Please state your Job Title and/or Professional Role
4. What aspect of your work do you see as being most valuable for society and why?
5. If possible, please name a significant ethical question, raised by your area of work, which society needs to consider.
6. How would you like the Church to be praying for your area of work, now and in the future?
7. How do you see your area of work developing in the next decade?
8. How do you see your area of work changing society in the next decade?

9. Are there any other comments relating to your area of work which you think it would be helpful for the Church and society to consider as we look towards the future?
10. Do you see yourself as having a Christian faith?
11. Do you currently worship at a local church?
12. Do you have a leadership role within a local church?
13. Please indicate which, if any, of these issues relating to faith and technology are of interest to you. Please select all that apply. (Options: Church Teaching on these issues; Employment / Unemployment; Environmental issues; Ethical decision-making in society; Legal issues; Medical issues; Prayer for those working professionally in these fields; Other (please specify))
14. Can we please contact you again in relation to issues of faith and technology? Yes/No

Contacting over three thousand clergy in this way led to over six hundred surveys being at least partially completed, of which over three hundred were fully completed. Over 90% of the complete responses were returned by those who saw themselves a working in a field related to science, medicine or technology. All but two of those respondents indicated that they saw themselves as having a Christian faith, 98% reported that they worshipped at a local church, and 47% reported that they had a leadership role within that local church.

Revd Dr Justin Tomkins (email@justintomkins.org), April 2020

'The Apocalypse of Jesus Christ'

Bishop David Atkinson

I am grateful to Maureen Palmer for the invitation to write something about my new book, which is a series of meditations on themes from the Book of Revelation.

The strange book of Revelation, written in about AD 95, opens up a world in which Christian people were under threat from the Roman Empire; some were suffering for their faith. Was it easier to fall in with the way of the empire in all its wealth and prosperity, in spite of its cruelty, than to hold fast to the faith? The prophet John records some visions of the Risen Jesus, which open up for him what we may call 'God's perspectives' on the Christian assemblies and on the idolatrous empire in which they found themselves. Written in the sort of poetic literature sometimes called 'apocalyptic' and drawing heavily on themes from the Hebrew Bible, John conveys his message encouraging the Christians to stay strong in their witness, while at the same time opening up the demonic realities behind the workings of totalitarian Empire. He looks towards God's ultimate victory over all that is evil, in the establishment of God's kingdom. The book is essentially a series of revelations about Jesus Christ: He is the Lord of the Church and King of all creation. He is the Faithful Witness to God's truth, and the Righteous Judge. He is the Beginning and End of all things.

Today we are subject to the allurements of many different sorts of godless 'empires', tempting us to put other gods in the place of Jesus Christ. These may be political or financial, local or global; they may be institutions or ideologies.

These meditations started as a series of Lent talks in 2019 to Churches Together in Sanderstead and Purley, a group of Christian churches in South London. Our question was: 'Can the Book of Revelation encourage us in our struggles and our Christian witness in our very different world?'

My book is called *The Apocalypse of Jesus Christ*. It is published by Wipf and Stock in the USA; ISBN 978-1-7252-6178-5, and is available from UK online booksellers such as Book Depository, Abe Books, Blackwells, Amazon, etc. Paperback 124pp.

CHANTRY LIST TO 2020

Arthur	Peacocke
Peter	Arvedson
Michael	Benton
Sjoerd	Bonting
Robert	Buckley
Mary	Catterall
Tim	Gouldstone
+John	Hapgood
Richard	Hills
Jack	Hird
Eric	Jenkins
Hubert	Makin
Philip	McPherson
Michael	Meredith
David	Moore
James	Moran
Rowland	Moss
Barbara	Pursey
Michael	Ranken
Robert	Semeonoff
Helen	Stacey
Bill	Stoeger
George	Tolley
Frank	Topham
+David	Young