

DIGITAL THEOLOGY

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DIGITAL THEOLOGY: A COMPUTER SCIENCE PERSPECTIVE

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LIST OF ABBREVIATIONS

Abbreviation	Refers To	Further Information
ACM	Association for Computing Machinery	https://www.acm.org/
AR	Augmented reality	
CDIO	Conceive, design, implement and operate in engineering education	http://www.cdio.org/
COVID-19	Coronavirus disease 2019	https://www.who.int/emergencies/diseases/novel-coronavirus-2019
ERP	Enterprise resource planning	
FOI	Freedom of information	
GPU	Graphics processing unit	
ICT	Information and Communication Technology	
ICT4D	Information and Communication Technologies for Development	https://ict4d.org.uk/ https://whatis.techtarget.com/definition/ICT4D-Information-and-Communications-Technologies-for-Development
IoT	Internet of Things	
IT	Information technology	
ITU	International Telecommunication Union	https://www.itu.int/
MOOC	Massive open online course	
OGD	Open government data	https://okfn.org/
RDI	Research, development and innovation	
SDG	Sustainable development goal	https://sdgs.un.org/

STEM	Science, technology, engineering and mathematics (education)	
STEAM	Science, technology, engineering, arts and mathematics (education)	
T4	Theology for	
UN	United Nations	
VR	Virtual reality	
W3C	World Wide Web consortium	https://www.w3.org/
XR	Extended reality	

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FOREWORD

The Covid pandemic which began in early 2020 has changed our view of the world in many ways. It is a reminder of our vulnerability in the face of the natural world and a time of deep sadness for many people. But it also accelerated a change in the way that churches interact with the digital environment. Broadcasting of services on the web became the norm rather than the preserve of mega churches. Small groups no longer met over tea and biscuits in the living room of a house but over Zoom and the constant refrain of ‘you are on mute’. Pastoral conversations were offered by church leaders on digital platforms and the guardians of faith and order had to consider whether communion could be done online.

These questions of mission, liturgy, community and discipleship have been talked about for over a couple of decades by digital enthusiasts and by those who have been excluded from church life on grounds of accessibility. But for many in the church these questions were not seen to be central to our understanding of the mission of God in the world. Many were quick to skim the surface using the technology of the web to advertise the church coffee morning or to provide cheap broadcast videos to support various ministries. Few people took seriously the complex texture and potential of this digital space and what we could learn about human nature and agency. Only a small number of prophetic voices engaged with the theological questions of what we could say about God in all of this – where we could see in the Athens of the digital environment the presence of the ‘unknown God’ and ‘that the God who made the world and everything in it is the Lord of heaven and earth and does not live in temples built by human hands’ (Acts 17:23–24).

This would have been a prophetic book even if the pandemic had not happened. With the pandemic and the lessons we need to learn from it, the book has urgency and even more importance. Its authors take us through the emerging field of digital theology with passion and expertise. Indeed any emerging field needs this type of book to inform, guide, critique and point forward. They combine academic rigour with accessibility. But this is far from just an interesting read. It is an exciting manifesto for the digital theologian,

the digital congregation and the Christian who wants to live the Lordship of Christ in everyday life which is now so digital.

It is essential that Christians, church leaders and church structures do not sleep walk or be catapulted into a very different world without identifying that God is already present and at work. However, we have got into it, the gift of the digital environment can and should be used for the glory of God.

David Wilkinson
St John's College, Durham University
June, 2021.

INTRODUCTION: TOWARDS A DIALOGUE OF THE THEOLOGICAL AND THE COMPUTATIONAL

The proliferation of information technology (IT) over the past 30 years has driven fast-paced change throughout every aspect of society – the ways in which we work, learn, socialise, date, interact with family and engage in acts of worship have all adapted to embrace a new technology. While the role of technology in most walks of life has been well documented, the role of technology in expression of faith and, conversely, the role of faith in technology, have thus far received surprisingly little discourse. This is starting to change. The new and emerging field of Digital Theology has recently begun to pick up momentum, exploring the complex and rapidly evolving relationship between the fields of technology and theology.

The related area of digital religion overlaps with Digital Theology. However, while digital religion explores the integration of technology within the phenomenon of religion, the perspective of Digital Theology is that of a given faith and its intellectual conceptualisation as digital representation. The particular viewpoint of Digital Theology focusses on expression of faith, as do the classic fields of Christian theology: exegetics, systematic theology, church history and practical theology¹ when they explore and analyse the sources, methods, trends and practices of the intellectual exercise of expressing and conveying faith as various forms of information. The interrelatedness between faith as spiritual belief and its intellectual, tangible expression as creed, doctrine or concrete behaviour forms the basis for the dialogue of theology and computer science applied in IT, as Digital Theology.

To help you, the reader, to navigate through the book, we will overview the design principles that guided us to compile our vision, agenda and methods of Digital Theology.

1.1. MEETING THE INCREASING DEMAND FOR DIGITAL THEOLOGY

Thus far, the discussion and debate surrounding Digital Theology has tended to be theology led, with reflections on the applications and uses of technology in faith communities being framed from a theological perspective. The discussion has also tended, so far, to be academically focussed – the debate has largely taken place in academic journals and at research symposia, often at a very high level and through a theoretical lens. The field of computer science has yet to offer a robust response to this discourse and, therefore, the unique perspectives which computer scientists can bring to this fascinating topic have so far not reached the mainstream.

This book seeks to address both of the identified gaps. First, it seeks to present a discussion on Digital Theology from a computer science, or more extensively computing, perspective – by exploring what the field might encompass, the types of problems the field might address and the approaches which the field might take, all through the lens of computer scientists.

The field of computing covers computer engineering, computer science, information systems, IT and software engineering.² Since our viewpoint is mostly focussed on the design of novel digital solutions for theologically relevant challenges, the relevant subfields for us are computer science that explores and develops computational methods at the limits of automation and software engineering that investigates the engineering aspects of designing the solutions. Because the solutions need to meet with the emerging requirements, co-design and evaluation are critical aspects of the engineering process – and these perspectives are studied in information systems. The solutions themselves are products of IT, dependent on computer engineering.

Second, this book seeks to address a wider audience than the typical academic circles who have tended to be the primary target audience for work published to date. This book seeks to engage readers from a variety of backgrounds – academics, students, technical developers, leaders of diverse churches and denominations, religious laypeople and the curious individual simply intrigued by how emerging technology might shift faith-based behaviours and practice and by how faith might inspire new approaches to technical design and innovation.

In taking this approach, this book hopes to drive forward the conversation around Digital Theology and equip readers to understand more about key challenges in the field and support readers in knowing where to look to take forward their interest and, we hope, active participation in the design challenges of this exciting, fast moving and innovative field.

In taking readers on this introductory journey through the emerging field of Digital Theology, we will cover a number of key topics:

- What is Digital Theology?
- Why study Digital Theology?
- How to study Digital Theology?
- What does the future of Digital Theology look like?

In guiding readers through these key questions and providing an overview of the field, the authors, both computer scientists and one also an ordained priest, will provide readers with a wide range of high-level examples and case studies. Many of these examples will be from our own portfolio of recent studies, which have focussed extensively on a variety of Digital Theology research questions. However, studies by other authors, from a range of academic backgrounds will also be referred to, to help demonstrate the diversity of thought already present within the field.

It will not be possible, in this short introductory book, for the definitions and examples which we will cover to be in any way exhaustive. That is not our intention. Our intent through this book is to provide a glimpse into as wide a range as possible of interesting Digital Theology activities already taking place and to provide a tempting overview of the art of the possible for future Digital Theology research and development.

Globally, several contemporary phenomena indicate the demand and interest in Digital Theology. The landscape of existential challenges includes interfaith encounters, dialogue between the Global South and Global North, the rise of religions (sometimes seen in the West as new spirituality), climate change, ageing demographics, political, ideological and religious polarisation, the fall of democracies and institutions, sudden pandemics and the interdependency of humankind that shares the same humanness, as expressed in the African concept of Ubuntu. All of these challenges have a theological dimension in the technology that needs to be understood.

Academically, the interest in digital humanities and computational social sciences is on the increase. The recent development trends of technology and its active userbase expanding to all walks of life not only creates opportunities, but also threats that have a theological dimension. A hands-on comprehension of how theology and digital technology not only enrich, but also challenge each other is needed more than ever before, for designing what is called humane technology.³

1.2. COMPUTER SCIENCE POINT OF VIEW ON DIGITAL THEOLOGY: DESIGNING DIGITAL SOLUTIONS FOR THEOLOGICAL CHALLENGES

From the viewpoint of computer science, this book uses the application field, theology and its requirements, as a source of inspiration. The focus is to show their relevance as challenges for digital applications that can change the world for the better, not to be theologically precise or comprehensive. The approach, however, is based on Paul Tillich's method of correlation.⁴ Tillich advises theologians to identify an existential question and struggle to answer it from the domain of theology. Thus, while our perspective is that of digital design for theologically relevant, or existential, challenges, we apply a method adopted from theology. The emphasis on existential questions in the digital realm and their intellectual, or informational, answers means that we use term theology, not religion.

Our, to some extent, relaxed approach – not very usual in most theology – translates to our flexible use of key terms that we use interchangeably. First, for an expression of faith, we also use terms belief or in some contexts religion. An intellectual elaboration of faith is not only theology, but occasionally also doctrine or creed. A group of people sharing the same faith is called a community of faith, congregation or church. And finally, an existential question is that of ultimate concern.

In this book, we adapt mainly the constructive or design approach of computer science. Computer science, originally a multi-disciplinary field born of mathematics, science and engineering, gets its inspiration from problems that can be conceptualised and represented as and solved by computational, automated processes. Therefore, while Digital Theology is a truly interdisciplinary field where all the integrated disciplines contribute, our perspective is that of computer science: we are mainly interested in the design and character of applications, and the influence and impact of computer science on challenges and problems of a theological nature. We have a pragmatic orientation: we look at these phenomena from a constructive point of view, emphasising the digital theological artefacts as instantiations of computer science. These artefacts do not necessarily need to be digital tools that are used only or even primarily in theological research and training, but in any areas which are rooted or inspired in the theological realm.

Within computer science, we approach Digital Theology from the perspective of interaction design: how to devise technologies that enhance and enrich the encounter and mutual understanding between people, rather than that between a computer and its user. This is because most of the theologically relevant questions are solved within faith communities. These questions can get novel insights by interactive technologies that allow different people to explore and elaborate them together. However, the focus on interaction does

not restrict the choices or genres of technologies: they can range anywhere from (shared) text searching and analysis to (distributed) artificial intelligence to (collaborative) games.

Our focus means that the emphasis is on design thinking rather than computational thinking, albeit we cover aspects of computation, like artificial intelligence and computational methods for interpreting data. Therefore, the term Digital Theology is a better choice for this book than its narrower alternative Computational Theology. A person doing Digital Theology could be called digital theologian or designer of Interactive Theology, another possible variation for Digital Theology that emphasises the interactive role of digital technology. In fact, Tillich's method of correlation is a design method.

Ideally, a design process for a meaningful, digital, interactive application for a theological challenge follows the principles of co-design. Co-design refers to a process where a set of diverse stakeholders work together throughout the design process, from identifying the requirements until the design is operational. The process requires trust and empathy that the co-design team exercises in a given real-life context, or several of them in which case we talk about intercontextual design. It resembles the approaches of Tillich's contemporaries in the Bauhaus design school. A functional design should touch its users with all their senses, being an aesthetic rather than anaesthetic experience.

For constructing any meaningful and functional digital artefact, the co-design process has to take place in one or more specific contexts that set the requirements and expectations for the artefact's use. For a relevant artefact in Digital Theology, the design process requires a given theological perspective and interpretation, throughout its design and evaluation. In our case, if not otherwise indicated, our context is that of Christianity and Christian faith communities. However, the insights and approaches can be re-contextualised to other faiths as well.

The book is inspired by the contemporary and emerging challenges at the crossroads of interactive technology and theology, rather than on a systematic literature review. The focus is on the question of how academic fields which seem so remote from each other can cross-fertilise each other and initiate novel insights and applications in a world that is increasingly shaped by technological and theological interests.

1.3. HOW DIGITAL TRANSFORMATION SHAPES DIGITAL THEOLOGY

For integrating the digital to theology, we can talk about three levels. *Digitisation* in theology refers to the representation of theologically relevant content

in a digital form; like digitising the Bible. *Digitalisation* of, or in, theology calls for integrating and making use of the full potential of digital technology in theology. *Digital transformation* of theology requires re-thinking theology – its contents and methods – by what digital technology allows for.⁵

Digital transformation requires a bold attitude towards innovation, a critical dimension of the trinity of research, development and innovation (RDI). While various technology acceptance or adoption models have identified reasons or motivations for making use of available technology as expected benefit or demand influenced by trusted people (Kambunga, Winschiers-Theophilus, & Goagoses, 2018), our viewpoint is that of designing new, rather than applying existing technological solutions. A serious, reformative digital transformation does not only automate a current, possibly outdated or irrelevant function, process or routine, but also explores what is really demanded and designs the solution accordingly. The former uses technology in a conserving way, possibly with an integrated incremental innovation and the latter designs new technology in a reforming way, with a twist of radical innovation.

Digital transformation in theology leads to solutions that are not adapted from another industry, but which are, truly and from the outset, theology-native – disruptive solutions, or game changers.

Five centuries ago, Christian theology met with another novel technical innovation – the printing press. The impacts of this encounter led to reformation that had, and still has, global implications. Maybe the contemporary encounter of theology with digital technology will turn out as impactful and decisive, for the method as well as the contents of theology.

1.4. TECHNOLOGY AND POWER ISSUES: TOP-DOWN OR BOTTOM-UP?

Technology has always had an impact on power: those who have will and skill to use technology, easily dominate others. This applies even more to IT that combines effective and efficient access and ownership to information. But knowledge, or for that matter, information on theological or the transcendental issues adds a significant element to power: those having ultimate comprehension of humans' final destiny could abuse this position and keep the less educated under control also during their earthly lives.

An analysis of the interplay of technology, theology and power is one of the key threads of the book. The questions have got increasingly important in the era of the clash of civilisations when technology has served as a critical instrument to dominate by conveying fear rooted in theological or religious aspects, or disinformation. The role of faith has varied between exploiting,

controlling or serving people, their work, ideas, bodies and talent. Technology can intensify all the orientations.

The tension between those in power, the authorities and establishment and the members at the grassroots characterises all communities, including those of faith. Several religious systems impose power structures that control the true meaning of the given religion. In the so-called religions of the book – Judaism, Christianity and Islam – the hierarchy of the clergy would traditionally have the final say on the correct interpretation of the sacred, authorised texts. This would apply as long as the laypeople would not be able to have access to or read the original texts. However, in the modern information society, digital tools allow both access to and tools to interpret even the manuscripts of the sacred texts, written in languages that the reader might not necessarily know. In this kind of citizen society, a religious community is no longer able to exercise a strict discipline on the correctness of a given interpretation. The interpretation might become crowd-sourced, and ultimately challenge those in authority.

Power issues can effectively enhance or prevent digital transformation, especially by radical innovation. A highly regulating community cannot cope with the first principle of innovation: it is better to ask for forgiveness than permission.

As of leadership and management practices, digital technology traditionally enforces management through the provision of structured data,⁶ measuring successes by performance, attendance, engagement or other data against the top-down strategies that have been devised by the establishment. Modern data science can open the leadership practices towards a more open-ended approach: analysing the data that emerges, identifying its trends and possible outliers and being proactive to take the church towards relevant, novel directions. A new leadership approach, data-driven, has to go hand-in-hand with transparency in decision making, privacy and open access to the data.

For any community, technology and the engineering efforts behind it are key instruments to show off power. Sacred spaces, whether physical or digital, can be landmarks for the role of a faith community. Digital solutions might promote transformation from public visibility towards private meaning and relevance. The nature of the church is more important than its form.

1.5. HOW TO USE THIS BOOK

Digital Theology invites its practitioners to a culture of exploration, to co-design and experiment creative uses of interactive technology for expressing faith by digital means. The aim is for this book to speak to different people

on different levels, while capturing the state of play at an early stage in the development cycle of this exciting new field at the intersection of computer science and theology.

Hence, as well as providing a narrative which we hope will prove useful as a standalone text on the field of Digital Theology, it is also our hope that this book will be, in some way, a practical resource. In covering both theory and practice, we intend that this book might provide a quick reference point for students of theology, sociology and computer science; an interesting think piece for policy makers interested in the role of technology in expressing faith; an educational resource for church and other religious groups to discuss and learn from; a series of ideas and suggestions for digitalisation strategies for churches and religious groups; and sources of inspiration for potential innovation projects in hackathons and group projects in computer science studies.

We suggest the use of this book for the following tasks:

- First, the book serves as a learning material and handbook for those students in theology or computing that specialise in Digital Theology.⁷ Teachers and instructors can find material for activating exercises or hands-on projects, also for more extensive capstone projects. We suggest teachers of computing and theology should give joint courses to their students. Integration of theology in engineering or the other way round can shake the outdated barriers between disciplines. An engineering exercise in Digital Theology fits also well within the modern CDIO (conceive, design, implement and operate) approach in engineering education.
- Second, the book gives digital challenges to youth groups in congregations, besides the conventional activities of music or discussion groups. A talented digital mind should be able to create themselves, not just sign up for existing services.
- Third, the book gives starting points and ideas for the digitalisation, data, digital transformation or future strategies and action plans of churches. We hope that the book will make its readers better aware of the opportunities that technology provides for the churches to reform and renew themselves and become increasingly relevant to all their members, and those outside. This is because a technology-ignorant church (leader) is not able to require digital solutions that would meet with their real demands.
- Fourth, the book serves as course material for in-service training and professional development for software houses and churches.
- Fifth, the book contains ideas for hackathons on Digital Theology.