Introduction

Around the middle of Dostoyevsky's *The Brothers Karamazov*, the elder Zosima, in his deathbed discourse on masters and servants, the spiritual brotherhood of mankind and his fervent hope for social equality, asks, 'And how many ideas have there been upon earth, in human history, which only ten years earlier were unimaginable and which suddenly appeared when their mysteriously appointed season arrived, to go spreading all over the earth?' (Dostoyevsky 2003: 411). This mysterious phenomenon, the *sudden appearance and diffusion of ideas*, is the subject of this book. The question at the core of my investigation is why and how some religious movements 'go spreading all over the earth', while others, equally popular for a time, wane and are forgotten. This is the basis for the exposition of a new approach to understanding religious diffusion in the Roman Empire: network theory.

Networks are everywhere. From the wireless hum of millions of people communicating online to the international, underground terrorist network of Al-Qaida, from the certainty that financial crises are now irrevocably global to the knowledge that industries have environmental repercussions far beyond their immediate surroundings, the world as we have made it is characterised by its interconnectivity. The ability to analyse and articulate the power of networks is part of this modern phenomenon – only with the enormous advances made in computing technology over the past decade can their potential begin to be fully realised. The theories that seek to explain the properties and power of networks are being developed by physicists, mathematicians, sociologists and computer scientists, who have used the methodology to analyse the transmission of a wide range of data: genes, cultures, information, technologies, diseases and ideas. The change in perspective afforded by theorising networks is the emphasis placed on connectivity: the power of the dynamic, fluid *interactions* that form and dissolve networks to affect cultural change and influence the success and failure of ideas.

Can these ultra-modern theories be used to tell us something new about the ancient world? This book aims to do just that: to demonstrate the potential of using a network perspective to approach antiquity – enabling us to ask new questions of and draw new conclusions from old data. My personal area of interest is religion, and how religious beliefs and practices are passed across space and time. This book shows how the application of a network theoretical method can achieve valuable new interpretations of three religious movements in the Roman Empire.

The chronological framework extends from the Hellenistic to the early Byzantine eras, but the main focus is on the evidence from the Roman Imperial period, the first–third centuries AD, largely because it was during this time that the majority of the epigraphic evidence was produced. By this period, the area encompassed by Imperial rule stretched from Spain to the Crimea, and from Scotland to southern Egypt. Under this administration lived a huge diversity of people, speaking a huge number of languages or dialects, and worshipping a huge number of local or global deities. The Roman government of this plethora of social, linguistic and religious forms provides a veneer of similarity, of a new *lingua franca*, of a 'globalised' environment, but how genuine was this? Even if the sameness was superficial, the trappings of Roman administration and the necessity of defending borders entailed a number of universalising features being imposed on the landscapes and the people. Most physically present were the roads and bridges that were built to facilitate the movements of the military, the accoutrements of the military and the long-distance communication systems that the Empire required.

Alongside these physical additions to the landscape came the ideological and social reminders of participation in empire – the statues and monuments to Imperial rule, the construction of bath-houses and amphitheatres, and the presence, along the *limes*, of the soldiers themselves. Latin as well as Greek became a pan-Empire language, used for documents (albeit more rarely) even to the borders with Parthia, brought with the administration of the provincial governors or with the soldiers of the legions. But for all these unifying factors within the Roman Empire, the varieties of local identities below the surface did not disappear. There is evidence for 'resistance' to the Romans and to 'Romanisation', both active (for example, the revolt in the province of Judaea) and passive (for example, the non-adoption of 'Roman' culture). Equally there is evidence for the eager adoption of Roman practices or names, as markers of status or political allegiance.

Religious movements spread across this environment at global and local levels, with differing degrees of success. The investigation at the heart of

this study starts from the premise that *people's social networks facilitate the spread of ideas* – whether they are technological, ideological, anarchic or religious. This book focuses on three different kinds of social network that were operative in the Roman world and the roles they had in the dissemination of new religious information: military, 'ethnic' and cultic.

The decision to apply network theoretical methods to try and understand the spread of religious ideas in the Roman Empire was inspired by the observation made by Stephen Mitchell in his article on Theos Hypsistos:

> The number of inscriptions for the cults of Zeus and Theos Hypsistos is large and expanding rapidly. The geographical range which they cover is huge, extending from Achaea and Macedonia to the eastern parts of Asia Minor and to the edge of the Syrian desert, from Rostov on the Don to the Nile Delta ... Hypsistos was one of the most widely worshipped gods of the eastern Mediterranean world. (Mitchell 1999: 99)

The inscriptions were also extremely uniform. How should such uniformity across such a broad and varied social and geographical area be explained? I decided to approach the problem by studying the distribution pattern itself, rather than by looking for an intrinsic factor in the cult that might explain its widespread propagation and adoption. Instead of using a top-down method to try to find an inherent quality in a religious idea that made it appealing, I undertake a bottom-up analysis of the physical locations of epigraphic data as marking the end result of the process of transmission: revealing something of the social routes that enabled the movement of religious innovations, and the social interactions between people that drove the adoption of new religious ideas.

There are a number of reasons why inverting the approach in this way is important for reappraising religious data (and, indeed, the spread of any cultural information). First, the approach is egalitarian: each dedication, however simple, plays some kind of role in the wider picture of a cult. Second, there is no assumption of centre. Centres and peripheries arise from *interactions on the network*, not from judgements made by archaeologists and historians. Third, it highlights otherwise invisible ideological connections between people and places, and allows us to hypothesise on the broader movements of ideas and the routes they took across the Mediterranean. By combining an understanding of how networks facilitate change at a general level with the social aspect of the 'structure of direct and intimate interpersonal attachments' (Stark 1996: 20) that specifically drive the transmission of religious innovation from person to person, the changing religious environment of the Roman Empire can be understood in a new way.

By assessing 'success' or 'failure' of the religious group as the result of the interplay between the inherent qualities of the idea and the structure of the social environment in which the idea is embedded, it is possible to reduce subjective value judgements about the superiority or inferiority of a religious innovation. Because innovations can be both alien introductions and arise naturally from within an environment, considering the connectivity of the network means it is possible to explain why some ostensibly valuable innovations are sometimes unsuccessful.

This book presents an account of where network studies are now in relation to the spread of innovations and ideas, the challenges to the approach and those posed by it, the ways networks have been used in archaeology previously, and some probable networks that influenced the ancient world. We will examine the religious environment of the Roman Empire and the ways this has been conceptualised in scholarship, the differences between innovation in monotheist and polytheist environments, and the ways religious movements have been analysed sociologically. The contribution to ancient history, archaeology and religious studies made by using a network methodology is demonstrated by three detailed analyses of the epigraphic material pertaining to some important religious movements in the Roman Empire – the cult of Jupiter Dolichenus, facilitated by the military networks of the Roman army, the transfer of new ideas across the reactivated 'ethnic' network of the Jewish Diaspora after the fall of the Temple in AD 70, and the strange phenomenon mentioned briefly above, the religious network formed by worshippers of the cult of the 'Highest God', Theos Hypsistos, and the connections these people had with contemporary Judaism – religious ideas that, in their mysteriously appointed season, went spreading all over the earth.

CHAPTER ONE

The network approach

Introduction: Why networks? Why now?

Old ways seem to age faster now than they ever have done before: part of the reason for this is that modern life is fully 'networked'.[1] We are ever more aware of our interactive and communicative power. Computing develops so quickly that most people can't keep up – resulting in computer scientists in possession of highly specialised knowledge – but, equally, technology itself is so ubiquitous that even our grandmothers have mobile phones. Information about everything is everywhere, more slow to arrive is the ability for individuals everywhere to access it – but when they can, modern technology brings with it the power to democratise, develop and disillusion. Faster than it ever has, technology is changing us, changing our lives, our minds and our bodies. As part of this rising technocracy are the news broadcasting agencies that beam information as it happens round the globe in seconds (and equally, the growing power of the subculture of hackers and data anarchists determined to ensure that *all* information really is free), the satellites that link us, willingly or unwillingly, into a web of global positioning systems so that it is increasingly impossible to be lost, at least until the batteries die, and the terrible demand for energy that is far outstripping the planet's capacity to produce it. We have *become* the network – we (sometimes) make the decision to unplug the wires for the weekend, we turn 'network' into a verb at social events where fun is less important than furthering careers, we use internet social networking sites like Facebook and Twitter to communicate with our friends, where once we might have written letters, made phonecalls, or paid them a visit.

For better and worse, the development of powerful computing technology and the accessibility of the Internet has brought the opportunity for engagement with *how* networks work – how ideas spread from

[1] Some of the ideas here have been published in Collar (2007: 149–62) and in Malkin *et al.* (2009: 144–57).

person to person, why fashions are fashionable and why diseases turn into epidemics at certain times and not others. Although these phenomena have been observed taking place for centuries, it is only in the last decade or so that we have had the technological ability to analyse and understand their mechanics. A proliferation of popular science books – from Duncan Watts' *Six Degrees* to Philip Ball's *Critical Mass* and Malcolm Gladwell's *The Tipping Point* – attempt to explain in lay terms social contagion, drug addiction and epidemics, financial bubbles, the madness (and wisdom) of crowd behaviour, the susceptibility of power supplies to failure, and the rise and fall of fashions. However, behind the catchy titles lie serious and complicated research into the structures, properties, power and dynamics of networks: the arcane domains of mathematicians, graph theorists, sociologists, theoretical physicists, and computer scientists.

All this combines to create a new science of network theory: concerned with answering the question, 'how does individual behavior aggregate to collective behavior?' (Watts 2003: 24) and, moreover, how 'globally coherent activity can emerge in the absence of centralized authority or control' (2003: 64). 'Emergence' and 'self-organisation' are key terms. The emphasis of network theory is on *interactions* as the drivers of change, and this is a fundamental switch in emphasis: instead of focusing on singular or purely functional reasons for change, understanding the power of interactions means that change can be viewed as decentralised, causally distributed and a cumulative result of multiple *individual* behaviours. Contributions are both scholarly and populist, and, with increasing knowledge about how networks work and how information transmits in the modern world, lay down the challenge to those who study the ancient world. Can these modern theories that seek to explain how networks affect modern life be applied to the past? How can we find evidence of networks in antiquity and did they operate in the same way, or is 'emergence' a phenomenon only of the world in which we currently live?

This chapter is intended to provide a somewhat simplified introduction to network thinking as a new methodology for understanding the processes of change and the spread of innovation in the past. In it, I draw on some approaches being developed in a number of disciplines that have been used to explain the transmission of a wide range of data – from concrete examples such as diseases to more intangible subjects such as ideas. Although the range of starting data and disciplines means there are some important differences between these approaches, the core ideas have much in common.

The point of commonality that can be identified is the importance placed on the connective power of the (human or non-human) environment – the *network* – in determining the success or failure of an innovation, an idea, a technology. By giving methodological precedence to the *connectivity* of the network, some potentially thorny notions of 'progress' or of the 'superior quality' or 'value' of the innovation are de-emphasised. The 'value' of an innovation is subjectively, ideologically and historically determined: and its success, measured by its adoption and diffusion, is often retrospectively couched in terms of 'superiority'. By instead viewing the success or failure of that innovation as the result of the interplay between 'value' and the physical, social and temporal networks in which it is enmeshed, subjective judgements about the 'superior' nature of the innovation itself are reduced. Innovations can either be alien introductions or arise 'naturally' from within a particular context. In either case it is possible for the connectivity of the network to account for why some innovations that might be considered as possessing 'objective' value are sometimes unsuccessful, while others become widely accepted or even a 'norm'.

This chapter offers a brief overview of the fundamentals of network theory as developed in sociology and physics. Network theory has developed from being used as a term to describe society as a static set of relationships through the dynamic Actor–Network Theory (ANT), which views people as only one aspect of multi-agent networks to where the theory is now – with a strong focus on information transmission and the dynamics of interconnections that constitute a network and facilitate the spread of ideas and information. Central to explanations of change is social identity, and specifically the 'strong' and 'weak' ties of our social networks. We then explore small-world theory and the power of 'weak ties', networks and social identity, network distance, diffusion of innovation theory (which introduces the notions of 'vulnerability' to innovation), and the role of social status in the process and transmission of innovations. Physics quantifies these findings mathematically, allowing us to draw conclusions about the connectedness of networks and the phenomenon of 'information cascade'.

A brief history of networks and how they work

Massive advances in computing technology in the last two decades, and with it, the simulative and predictive potential for *in silico* modelling, has to a large extent driven the rapid recent development of network theory by mathematicians, physicists and sociologists, who have applied the

principles to a huge range of subjects, both human and non-human, social and non-social. As such, there is a vast and ever-developing body of literature on network theory, which essentially forms two different disciplinary strands of research: that in maths/physics and that in sociology. In this chapter, the focus is firmly on the social, as this book is concerned with understanding how religious ideas spread through the Roman world, so there are only minor forays into physics and mathematics. Mathematicians and physicists have used networks to describe non-human phenomena such as the process of *phase transition*, where a state is transformed suddenly into another – for example, in the process of magnetisation, or when water freezes, or turns to steam. Sociology, naturally, is interested in human relationships, leading networks in this discipline to be used to explain social contagion. This is not to say that sociologists don't use maths or mathematicians aren't interested in social problems: in fact, the increasing interest in network theory has led to the creation of a combined sub-discipline: socio-physics. However, the traditional divide has led to separate developments in network thinking; and for the purposes of this book, we will remain as much as possible within the bounds of the human.

In 1895, sociologist Emile Durkheim conceptualised the holistic power of social networks when he described the Aristotelian idea that 'human society is an emergent phenomenon, different from the sum of its parts' (Durkheim 2004: 86–7). The actual term 'network' was first used in the discipline by Talcott Parsons, summed up here by Nadel, to describe 'the structure of a society through abstracting from the concrete population and its behaviour the pattern or network (or "system") of relationships between actors in their capacity of playing roles relative to one another' (Nadel 1957: 12). The 'system' as it was thought of at this point in time was part of the prevalent structuralist, functionalist discourse in which an underlying social structure is conceived as being composed of a set of institutions and roles that maintain the equilibrium of that society. The term 'network' was developed to include 'the further linkage of the links themselves and the important consequence that, what happens so-to-speak between one pair of "knots", must affect what happens between other adjacent ones' (Nadel 1957: 16).

Although this notion of social networks as fixed and formulaic is rather problematic, it has largely been overcome by the new emphasis on networks as dynamic, fluid entities. All that a network essentially comprises are points interconnected by lines, or 'nodes' and 'edges'. These edges that interconnect nodes are the channels across which information can pass from one node to another (see Wasserman and Faust 1994). The pattern

and structure of these interconnections – which nodes are connected to which – has a profound impact on what happens at a larger scale, i.e. what changes are witnessed at a 'global', full-network level. The point about one knot being affected by 'other adjacent ones' is the key here: the change in perspective afforded by studying interconnectedness gives the theory its weight – how and why information travels across the network is a result of the *connections*, not simply as a result of the individual nodal identities.

Bringing the discussion forward in time a little, a similar conception of networks in sociology is found in Actor-Network Theory (ANT), formulated by Bruno Latour and Michel Callon in the 1980s, which developed the notion of non-human agency playing a role in society to provide a counterpoint to the study of purely human social networks (Latour 1987). In this view, 'actors' are considered to be any entity that does something, and can include people, places, objects, ideas, technologies, etc., and 'network' is used to describe the multi-dimensional relationships between actors that together form an organisation, a society, and so on. 'Instead of thinking in terms of surfaces – two dimension – or spheres – three dimension – one is asked to think in terms of nodes that have as many dimensions as they have connections . . . ANT claims that modern societies cannot be described without recognising them as having a fibrous, thread-like, wiry, stringy, ropy, capillary character that is never captured by the notions of levels, layers, territories, spheres, categories, structure, systems. It aims at explaining the effects accounted for by those traditional words without having to buy the ontology, topology and politics that goes with them' (Latour 1998).

In this conceptualisation, the roles of 'actors' are formed and determined by their relations with other actors – i.e. by their network. In this way, the combined multi-agent network can act as a single entity, used to explain such things as how organisations work, or to recast scientific breakthroughs as multiply authored and contingent upon temporal and spatial location, that previously might have been conceptualised as a singular event or the product of one man's genius.[2] The ANT network is 'dynamic' in that it requires repetitive performance of the existing relations, and when these relations break down so does the functioning of the network as a whole. Critics have pointed out that ANT does not attempt to explain *why* a network exists, that it fails to account for imbalances because all actors in a network are assumed to have equal importance, and that the framework does not take into account pre-existing structures and relationships.

[2] This is not to say that geniuses don't exist, but rather that genius is also a product of environment, background, upbringing, education, opportunities, etc. as well as innate intellect.

Where network theory as it has developed in the last decade differs from structural, static networks in sociology and from ANT's multiple-agent network is in the focus on the actual process of *information transmission*, on the dynamics of the multiple interconnections and their structure that facilitate the spread of ideas (which can of course include human, animal and non-human systems). The conception of the network as a non-static object upon which action takes place, and which *is itself determined* by that action, is where the new science of networks is able to bring a truly innovative perspective to previous problems. The new network theory spans a massive disciplinary range, from the 'pure' sciences of biology, physics and genetics – to anthropology, archaeology, history, computing and beyond.

Social identity and clustering

Social identity is multi-faceted: as Latour described modern society, so must we consider individuals – multi-dimensional, contingent, formed and re-formed by life and their experiences of it. Some aspects of identity are imposed upon us – race, sex, social class, mother tongue and so on. As with their parents before them, my parents' backgrounds, opinions and choices are enacted upon me as they bring me up, both physically, in terms of where I live and with whom I come into contact, and in terms of expectations of and opportunities for someone in my particular situation. However, people's identity is also bound up in the groups they belong to (or are told they belong to). These groups cover every aspect of our lives, from what we enjoy doing, where we live, what we work as, our political affiliations, or our chosen sports teams. Often, these groups are interrelated: residents of certain areas often also fall within similar economic groupings. Some are actively chosen groups – for example, counting myself among those who play Ultimate Frisbee or who do ballroom dancing (both badly). Some are passive groupings – my height meant I could never have been a ballerina, or a gymnast, or a jockey, however much I wanted to be all those things. (There was no such restriction in archaeology.)

Many of these groups can be identified as local clusters – neighbours, colleagues, family, friends – people who see each other regularly and who can be considered as *strong ties*. This is the term used in sociology to describe people with whom an individual has close, repeated and regular contact, with whom they share many aspects of their life, described by sociologist Mark Granovetter as 'a combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and reciprocal