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WOMEN, CHARITY AND MOBILITY IN EARLY CHRISTIANITY

WEAK LINKS AND THE HISTORICAL TRANSFORMATION OF RELIGIONS

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In this chapter we will use the example of Early Christianity to examine how the cognitive aspects of religion are connected to the social structures that religion creates or uses. Religious ideas not only affect the cognition of individuals (for example, by planting memorable ideas into their heads), but many also directly influence people's social attitudes and behaviour. Social structures, in turn, influence how ideas, including religious ones, are transmitted within a human population. The connection between religious ideas and social structures is thus bi-directional: religious ideas affect social structures and social structures influence the success of religious ideas.

Every day, two or three new religions are started somewhere in the world.¹ This is an incredibly high number, implying that a thousand new religions will be born this year alone and that half a million have been founded since the time of the Reformation. If we make an inventory of the existing religions in the world,² however, the total number will amount to about a couple of thousand, which is more than what one might expect intuitively, but definitely far less than the figures presented above would suggest. This observation begs the questions of what happens to most new religions, what makes some of them successful while most others fail, and why some of them grow into world religions such as Buddhism or Christianity. One possible answer is that successful religions have especially insightful founders (such as Moses, Jesus, Muhammad or Buddha), who are able and/or were chosen to receive exclusive divine revelation about matters of ultimate truth. This is, at least, what the great foundational narratives and other traditions of the respective religions claim. Tradition also recounts the great deeds and exceptional authority of the immediate followers and suc-

¹ Dennett, *Breaking the Spell*, pp. 101, 396; Barrett et al., *World Christian Encyclopedia*, vol. 2.

² Barrett et al., *World Christian Encyclopedia*; Robinson, 'Religions of the World.'

cessors of the great founders, such as in the vast literature concerning Jesus' apostles.

A closer look at the circumstances in which Early Christianity emerged can be used as a test case. The historical setting in which Christianity was born can be characterised as an era of a religious free market. Starting from the late fourth century BC, the Hellenistic empires of Alexander the Great and his successors, as well as the Roman Empire, created ideal circumstances for large-scale cultural exchange across the Mediterranean. Several factors, including military service, imperial administration, trade, the relative ease of travel (by ancient standards), and the use of Latin and Greek as the languages of communication, facilitated the circulation of cultural elements. A great degree of cultural tolerance (again, by ancient standards) was another significant factor. For religious life, this meant, in particular, that the practice of a variety of different cults was tolerated as long as they did not question the political status quo or participation in the official cults and festivals of the empire.³ Under these circumstances, most religions in the Roman Empire can be seen as competitors in a free market. Christianity was one of these competitors, a latecomer that ultimately won the competition and became the State religion of the declining empire in the fourth century AD. Attributing the ultimate success of Christianity merely to political will, however, would be a mistake. Constantine the Great (who accepted Christianity in the edict of Milan in 313 AD) and Emperor Theodosius (who made it a State religion in 380 AD) merely gave official recognition to the already evident power and future potential of the cult, which by that time had clearly won out over many of its great rivals, such as the cult of Mithras.⁴ How Christianity achieved such power and potential is a more challenging question.

What makes some religions spread more successfully than their competitors? We can break this question down into the following more concrete problems. First, what makes some religions spread faster than others? A faster growth of adherents obviously means an advantage in outcompeting other religious movements. Second, what makes them spread more broadly than others? Fast growth is not enough: a rapidly spreading movement can be locally successful yet still limited in its geographical or social diffusion. For a religious innovation to become a world religion, or at least to gain regional significance, it has to cross geographical and social divisions. Third, a religion has to maintain some degree of homogeneity among its adherents, otherwise it would not be recognised as a unitary religion. Note that institu-

³ Burkert, *Ancient Mystery Cults*; Martin, *Hellenistic Religions*.

⁴ Martin, 'Performativity, Narrative, and Cognition'; Beck, *The Religion of the Mithras Cult in the Roman Empire*.

tional unity might be a concern for the movement itself, yet it is not an obvious criterion for its success. Different branches of Christianity, for example, have been institutionally independent from each other throughout their history.

Finally, what makes some religions last longer than others? Rapid growth, wide diffusion and homogeneity are not enough: if a movement aspires to the position of a successful religion, it has to sustain itself in the long run. In this sense, the exceptional attractiveness of some religious ideas (which could be based, for example, on their *minimally counterintuitive* features, see below) does not yet explain the long-term success of a religion. Arguably, fads are driven by attractive cultural elements, yet they disappear as quickly as they started. Rather than turning to the great founders and their successors for an explanation, or asking about the attractive features of religious beliefs, in this chapter, I will test the hypothesis that the long-term success of Early Christianity was due to its stimulating the formation of particular types of social networks. I will especially deal with the importance of developing a great number of *weak links* in Early Christianity. It will be argued that network formation was particularly influenced by some social attitudes, as well as playing an important role in the development of cognitively optimal or closely optimal religious beliefs.

I will first introduce graph theory and provide some clarifications with regard to its use in this chapter. Second, I will review some recently evolved insights about networks, with special attention to the role of *weak links*. Third, I will suggest how Early Christianity promoted the development of weak links – probably as a side effect of its moral attitudes, rather than in any conscious way. Fourth, I will examine how weak links and related network structures influenced the long-term development of Christianity.

1. *Graphs, networks and some clarifications*

Networks are models consisting of nodes and links. The dots in Figure 1 stand for the nodes of a network connected by lines that represent links between them. The physical arrangement of the dots and the physical length of the lines are determined by the convenience of graphical representation and do not bear any significance for the structure of the underlying network. Mathematicians tend to talk about graphs rather than networks: graphs are mathematical objects consisting of vertices (rather than nodes) and edges or arcs (rather than links). For our purposes, the two models and their terminologies are interchangeable. Classic graph theory goes back at least to Leonhard Euler's problem (1736) of the bridges of Königsberg (present-day

Kaliningrad).⁵ Thorough mathematical investigation of graphs started in the 1950s, with important contributions by Paul Erdős and others.⁶ Mathematical models in this period especially focused on random graphs, ones in which links are randomly distributed among nodes. A renewed interest in networks started in the last decade of the twentieth century, which at this time arose especially in various fields applying network models rather than in mathematical theory proper. Scholars representing these fields include Duncan J. Watts and Steven H. Strogatz,⁷ as well as Albert-László Barabási and his collaborators.⁸ In particular, these researchers examined networks with a non-random distribution of links, which results in similar structures to those mentioned in this study in relation to Early Christian networks.

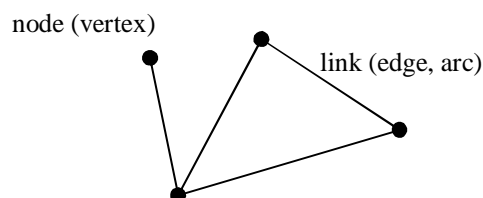


Figure 1. The components of a network (graph).

Networks have been used as models in various scientific domains: here we will especially refer to applications in sociology and ecology. The study of sociological networks started in the first half of the twentieth century, when Jacob Moreno created so-called *sociograms* to map out the social structure of school classes or work communities.⁹ In sociological networks, nodes stand for people or institutions and links stand for social relationships among them. However intuitive such an approach may seem to be, there are a few important problems to be mentioned before going into any detail about social network theory. First, social links among people can be measured in different ways.¹⁰ The standard procedure for making sociograms is to design questions asking subjects to indicate which other member of the

⁵ Euler, 'Solutio problematis ad geometriam situs pertinentis'.

⁶ Erdős and Rényi, 'On Random Graphs, I'.

⁷ Watts and Strogatz, 'Collective Dynamics of "Small-World" Networks'.

⁸ Barabási and Albert, 'Emergence of Scaling in Random Networks'.

⁹ Moreno and Jennings, *Who Shall Survive? A New Approach to the Problem of Human Interrelations*.

¹⁰ Krackhardt, 'Cognitive Social Structures'; Pittinsky and Carolan, 'Behavioral Versus Cognitive Classroom Friendship Networks'.

group they would choose as a partner in some joint activity (for example, with whom in the class a child would like to play).

Another way to map out social networks is to observe with whom people actually interact. Social networks of choices and social networks of interactions are not necessarily identical. Another question to be decided when using network models in any domain is whether one intends to examine networks of instances or networks of types.¹¹ For example, the sociogram of a class takes individuals as nodes of the network, whereas in an ecological network, nodes typically stand for animal species (that is, types), rather than individual animals (that is, instances). In this chapter, we will examine networks of instances, that is, social connections among individuals who belonged to the earliest Christian groups. However, most of the time these individuals will remain idealised instances, such as apostles, itinerants, women, poor and so forth, since we do not possess enough data to identify many of them as historical characters. The network model outlined in this chapter has the potential to be used later to analyse historical data about people and their social connections in the sources.

In biblical studies, we should mention the contribution of Dennis C. Duling, who used graph theory to analyse the geographical background of Jesus' activity in the gospels,¹² as well as the social networks of his environment,¹³ in an attempt to 'reconfigure' Gerd Theissen's model of 'itinerant charismatics' and 'community sympathizers'.¹⁴ We need to note that this careful analysis of literary and archaeological sources blends physical and narrative worlds in a problematic way. It is questionable whether the resulting networks ultimately represent the kind of sociological information with which Theissen's model is concerned.

Information about various important people and their social relationships (such as information about the families of Jesus or John the Evangelist) has certainly been shaped by tradition and might often reflect real-world phenomena in the *communities* that transmitted the texts rather than the social reality of the historical Jesus and his social environment. Theissen, on the one hand, works with types of agents in his model (describing the relationship between wandering charismatics and settled sympathisers),

¹¹ Santos, Bersini and Lenaerts, 'Networks Regulating Networks: The Effects of Constraints on Topological Evolution'.

¹² Duling, 'The Jesus Movement and Social Network Analysis (Part II: The Social Network)'.

¹³ Duling, 'The Jesus Movement and Social Network Analysis (Part I: The Spatial Network)'.

¹⁴ Theissen, *Soziologie Der Jesusbewegung*; *Idem, Sociology of Early Palestinian Christianity*; *Idem, Die Jesusbewegung: Sozialgeschichte einer Revolution der Werte*.

as well as social connections among idealised instances (an approach that is similar to the one used in this chapter). Duling, on the other hand, attempts to analyse networks at the level of instances, as concrete geographical objects, artifacts and individuals with a personal identity. The success of the latter attempt largely depends on the historical accuracy of the sources, which is at best highly questionable, especially with respect to the kind of biographical data needed for Duling's study.

2. Weak links in social and ecological networks

The theory of weak links was formulated by Mark S. Granovetter in his 1973 article 'The Strength of Weak Ties'.¹⁵ Here Granovetter argues that 'the degree of overlap of two individual's friendship networks varies directly with the strength of their tie to each other'.¹⁶ Let us unpack this argument in some detail. The *strength* of an interpersonal tie is defined as the (linear) sum of the amount of time, the emotional intensity, the intimacy (mutual confiding) and the reciprocal services that characterise the tie.¹⁷ Granovetter's hypothesis states that given a group of persons to whom either A or B is connected with a social tie, the stronger the tie between A and B, the larger the proportion of individuals in the group to whom both of them will be tied, on average. Granovetter cites three underlying causes for this regularity.¹⁸ First, the stronger the tie between two people, the more time they will commit to this relationship. If A is connected to both B and C with strong ties, the chance is great that B and C will also meet and have a social tie of some strength at some point.

Second, there is empirical evidence that the stronger the tie connecting two individuals, the more similar they will be in various ways, again increasing the likelihood of one's two friends developing a social tie once they meet. Third, cognitive balance theory predicts that if A has a friend B who expresses a positive opinion about a friend C, A will want to have feelings about C congruent with the feelings of B, resulting in a social tie between A and C once they meet. In a simple formulation of the weak links hypothesis, Granovetter argues that the triadic relation in Figure 2 is an unlikely one (*forbidden triad*): if A has strong social ties to both B and C, there will also be some kind of social tie (weak or strong) between B and C (see Fig. 2)¹⁹.

¹⁵ Granovetter, 'The Strength of Weak Ties'.

¹⁶ Granovetter, 'The Strength of Weak Ties', p. 1360.

¹⁷ *Ibidem*, p. 1361.

¹⁸ *Ibidem*, p. 1362.

¹⁹ *Ibidem*, p. 1363.

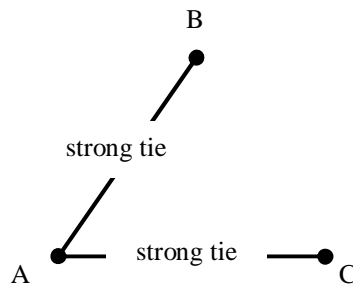


Figure 2. The 'forbidden' triad.

The major significance of weak ties, Granovetter argues, is that they can serve as *bridges*, that is, as the only links between two nodes of the network.²⁰ At this point, it is useful to introduce the notion of a *path* in a network. Imagine that the nodes of a network are cities, and starting out from one city you can reach another by driving along a particular road. If there is a road from A to B as well as from B to C, you can be sure that there is a path between A and C. Returning to social networks, in terms of the argument outlined above, if two individuals A and B are connected by a strong tie, they will have common friends, and there will be several paths from A to B via these common friendship links. For example, a piece of information, known to A, can reach B either directly or via one of several paths connecting them. If A and B are connected by a weak tie, in contrast, it is possible that they have no friends or acquaintances in common, and even their friends do not have any friends or acquaintances in common, and so forth.

In such a case, the weak tie between A and B serves as a bridge, the only path connecting two subnets of a social network, and any path between two individuals who belong to different subnets must include the bridge, that is, the weak link between A and B. In any real society, there is usually more than one path between two individuals. Granovetter therefore extends the notion of a bridge to a link that provides the shortest path between two individuals, or even subnets, which would otherwise only be connected by very long paths. Such bridges will also be weak links. Bridges in this general sense gain significance in cases where the path length matters. For example, there may be a distance beyond which communication is not viable due to the high costs involved and the distortion of information during transmission.

²⁰ *Ibidem*, pp. 1364-1365.

Granovetter's hypothesis of weak links and variants of the original hypothesis have been tested in a number of empirical studies. An important domain of application has been the advantage of weak links in the job market. In his original study, Granovetter suggested that people find new jobs with the help of individuals to whom they are connected by weak links (acquaintances), because they provide new information more often than close friends and relatives, who tend to be in possession of the same information as the jobseeker.²¹ Granovetter initially found supporting evidence for this hypothesis in his own fieldwork. Later empirical studies nuanced the picture in several respects.²²

First, it has been found that jobseekers in a desperate situation, such as unemployed people or graduates looking for their first position, tend to find jobs through strong rather than weak ties. This can be explained by the fact that people to whom we are connected with strong ties are more easily accessible and have greater motivation to help us when in need. At the same time, weak ties are of little use in acquiring new information and to advance if they are not bridges. One should keep in mind that whereas all bridges are weak ties, not all weak ties function as bridges. People in lower socioeconomic groups, Granovetter suggests, often have weak ties that connect them to the acquaintances of friends or relatives who do not constitute a real broadening of opportunity. For such people, the use of weak ties brings little advantage, in contrast to people of higher socioeconomic status. Empirical research has also shown that people in lower socioeconomic groups tend to rely on strong rather than weak ties, which results in the formation of encapsulated networks, actually perpetuating the low socioeconomic status of these people.²³

Another group of studies has focused on innovations. Although the question of innovation is sometimes blurred with the problem of diffusion (discussed below), it clearly constitutes a separate issue. Granovetter's original study already referred to the empirical finding that people connected by strong ties tend to be more similar to each other than people connected by weak ties.²⁴ Relying on Rose Coser's work on individual autonomy,²⁵ in his

²¹ *Ibidem*, pp. 1369-1373.

²² Granovetter, 'The Strength of Weak Ties: A Network Theory Revisited', p. 201; Brown and Konrad, 'Granovetter was Right: The Importance of Weak Ties to a Contemporary Job Search'; Harvey, 'Strong Or Weak Ties? British and Indian Expatriate Scientists Finding Jobs in Boston'.

²³ Stack, *All our Kin: Strategies for Survival in a Black Community*; Lomnitz, *Networks and Marginality: Life in a Mexican Shantytown*.

²⁴ Granovetter, 'The Strength of Weak Ties', p. 1362.

²⁵ Coser, 'The Complexity of Roles as a Seedbed of Individual Autonomy'; cf. *Idem*, *In Defense of Modernity*.

second study Granovetter proposed that weak ties bridging different groups provide people with complex sets of roles (complex *role sets*) that require them to develop cognitive flexibility.²⁶ Complex voluntary organisations, for example, depend on the presence of such cognitive abilities that enable people 'to assess the needs, motives, and actions of a great variety of different people simultaneously'.²⁷

The impact of weak ties on innovation has been empirically tested by other researchers. In a study of the emergence of innovations in management, Ronald Burt examined what he calls 'structural holes' in social networks.²⁸ Since behaviour, opinion and information within groups tend to be more homogeneous than between groups, holes in the information flow are created between groups. Burt shows that between-group brokers, that is, individuals connected to several social clusters by bridging weak links have a 'vision advantage'.²⁹ Moreover, due to their position in the social network, they are more likely to express ideas, less likely to have ideas dismissed, and more likely to have ideas evaluated as valuable. Hauser and colleagues have demonstrated that associational activity (activity in clubs and associations) contributes more to innovation in firms than other aspects of social capital (such as political interests, friendship ties and trust).³⁰ Associational activity is precisely the kind of social capital that depends on the presence of weak links. These studies prompt the question of whether the great innovators in the history of religion were between-group brokers rather than visionaries or geniuses in a psychological sense, as well as the problem of how far associational activities contribute to innovations in religious groups.

An area that is related to both of the above-mentioned domains of application (social status and innovativeness) and is particularly relevant for the study of Early Christianity is the diffusion of ideas and other cultural bits. By their very nature, weak links are likely to provide bridges between isolated or distant parts of social networks and thereby facilitate the flow of information in the network. Relying on previous research on diffusion, including Everett Rogers' important study from 1962 that highlighted the role of 'early adopters' for the success of innovations,³¹ Granovetter proposed that the successful diffusion of high-risk innovations particularly needs the

²⁶ Granovetter, 'The Strength of Weak Ties: a Network Theory Revisited', pp. 203-205.

²⁷ *Ibidem*, p. 205.

²⁸ Burt, 'Structural Holes and Good Ideas'.

²⁹ *Ibidem*, p. 386.

³⁰ Hauser et al., 'The Learning Region: The Impact of Social Capital and Weak Ties on Innovation', pp. 75-88.

³¹ Rogers, *Diffusion of Innovations* (New York, 1962).

involvement of individuals with many weak ties. If innovations are risky or deviant, Rogers' 'opinion leaders' – whose early involvement is supposed to guarantee the success of innovations, by pushing the spread of innovations beyond the 'tipping point' – might be too reluctant (precisely due to their social position) to be among the early adopters. Case studies include the surprisingly rapid diffusion of cultural elements in youth culture,³² which relies on the use of weak ties rather than on the use of the adult-controlled mass media. One can add that today the internet creates tremendous opportunities for the creation of weak ties. In a number of diffusion studies, people had to forward an item to a social contact until it reached an addressee designated by the experimenter.³³ The importance of weak social ties for the successful completion of the chain has been demonstrated by these experiments.

One of these studies, Stanley Milgram's empirical investigation of the 'small-world' phenomenon,³⁴ touched on a problem that has been widely discussed in network theory recently. In his experiment, Milgram tested the popular idea that all people in the world are separated only by a few social contacts – the first-known formulation of the idea coming from the writer Frigyes Karinthy.³⁵ Much recent work in network theory has been dedicated to the small-world nature of some networks, which exhibit both high clustering and a short typical path length.³⁶ High clustering means that a node in the network has many neighbours that are also connected with each other. A short typical path length means that one can reach most nodes from most other nodes by only visiting a few intermediate connections. Although both features could be realised simply by connecting each node with each other node in the network (a complete, or globally coupled network), this is hardly viable in most social and other real-world networks.

Random networks, in turn, where each node has a random number of connections, have a short average path length but show no clustering. Star-shaped networks (Figure 3) have a central node to which all nodes connect and each node has no other connection than the one to the centre (consider

³² Fine and Kleinman, 'Rethinking Subculture: An Interactionist Analysis'.

³³ Milgram, 'The Small-World Problem'; Travers and Milgram, 'An Experimental Study of the Small World Problem'; Korte and Milgram, 'Acquaintance Networks between Racial Groups'.

³⁴ Milgram, 'The Small-World Problem', pp. 60-67.

³⁵ Karinthy, 'Láncszemek'.

³⁶ Watts and Strogatz, 'Collective dynamics of "small-world" networks'; Barabási and Albert, 'Emergence of Scaling in Random Networks'; Dorogovtsev and Mendes, *Evolution of Networks: From Biological Nets to the Internet and WWW*; Wang and Chen, 'Complex Networks: Small-World, Scale-Free and Beyond'; Solé et al., 'Selection, Tinkering, and Emergence in Complex Networks'.

all the roads in the former example starting from the capital city and running only to one particular city without any roads directly connecting two cities, and thereby requiring all travellers to pass through the capital). While this is an extremely parsimonious network, fulfilling both criteria, such a scenario is rather unusual in social networks, where individuals always have more than one social tie. A star-shaped network could model an organisation in which some sort of information flows in a strictly hierarchical manner (see Fig. 3).

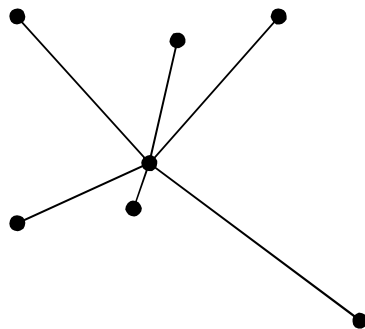


Figure 3. Star-like network.

Another sort of network fulfilling the criteria of a small world can be realised based on a regular network, or more precisely a nearest-neighbour network, where each node is connected to an equal number of nearest neighbours.³⁷ Of course, being a neighbour in a network does not mean physical proximity: neighbouring nodes are ones that share most of their contacts with each other. In its simplest form, such a network can be imagined as a ring of nodes, where we connect, for example, each node with its first and second neighbour (Figure 4). The network will be highly clustered (most of a node's neighbours will also be each other's neighbours) but the typical path length will be long. If this network modelled the roads in our example, we would have to drive through every second or third city on our way to a city in another part of the country. This could be avoided by building some roads across the country that directly connected distant cities. This is indeed what Watts and Strogatz did in their model, removing one end of some existing links and attaching them to a distant node (which in our example would mean that we close a road to build a new one).

³⁷ Watts and Strogatz, 'Collective dynamics of "small-world" networks'.

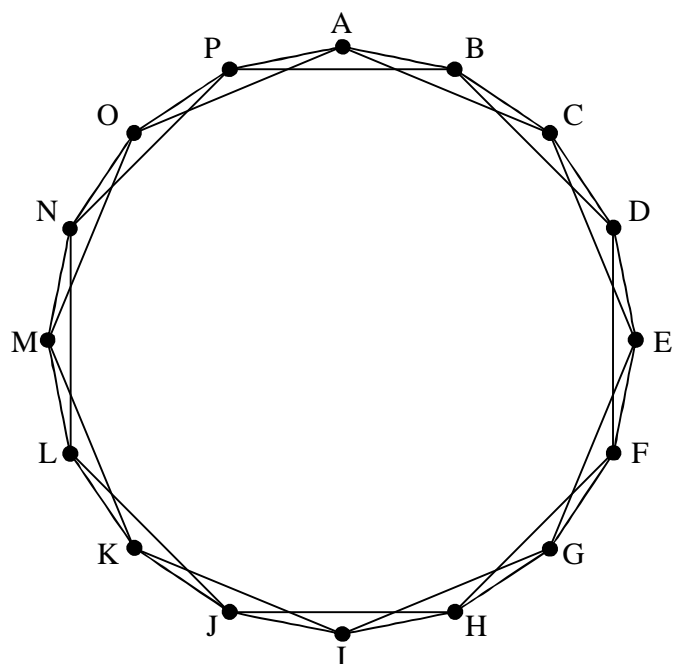


Figure 4. Nearest-neighbour network.

The resulting network (Figure 5) became a small-world network, with nodes both densely connected to their neighbourhoods (forming clusters) as well as having quick access to any other node in the network.³⁸ If we apply the model to social networks, the resulting long-distance connections will be weak ties. This can be seen from the fact that they are bridges, connecting individuals who do not share any friends or acquaintances, and who are therefore unlikely to be friends themselves; in terms of Granovetter's theory, in turn, bridges can only be weak ties. A real-life application that comes close to this model was suggested much earlier in the context of biracial school settings in the United States.³⁹ It was proposed that rather than at-

³⁸ In Figure 5, for example, the AB, DE and FG distances slightly increased, yet most other path lengths decreased, in many cases, from three to just one intermediate stop. In large networks (Watts and Strogatz tested networks with 1000 nodes), the effect of long-distance connections on the typical path length is even more significant.

³⁹ Karweit et al., *The Conditions for Peer Associations in Schools*.

tempt to make white and black children become friends, classrooms should be arranged in ways that produce weak contacts among black and white cliques (see Figs. 4 and 5).

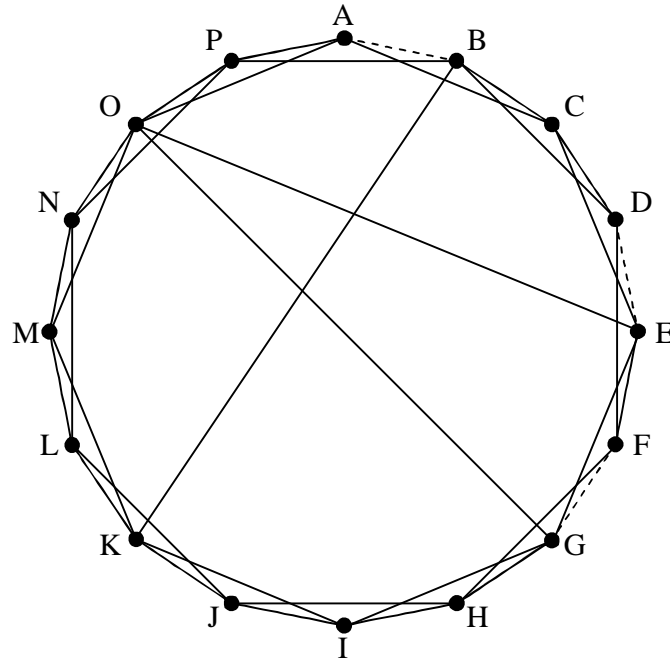


Figure 5. Rewired nearest-neighbour network (deleted links shown as dotted lines).

Many real-life networks come into being by gradual growth.⁴⁰ Small-world qualities emerge in networks if they grow by *preferential attachment*, which means that new nodes in the network tend to attach themselves to existing nodes that already have a large number of connections. The phenomenon called ‘the rich get richer’ in the vernacular thus results in the formation of small-world networks. According to a more precise mathematical formulation, these networks are ‘scale-free’, which refers to the distribution of links among the nodes: the majority of links are connected to a few nodes, whereas numerous nodes only have a small number of links. The function that describes the distribution of links in such a network is *scale-free*, both in the sense that it does not have a typical value (there is no typical number

⁴⁰ Barabási and Albert, ‘Emergence of Scaling in Random Networks’.

of links that a node is expected to have) and that the resulting network is self-identical on any scale (that is, it looks the same if we magnify and observe increasingly smaller fragments of it: in other words, it has a fractal structure). An important feature of scale-free networks is that they are quite resistant to the random removal of links, that is, most nodes in the network remain connected after such changes.

Insights into weak links in social networks have been applied to networks in other domains as well,⁴¹ including ecological systems.⁴² In ecological networks (networks that model the interaction of biological species in a habitat), a link is defined as weak, if removing a species from the network does not result in a significant change in the abundance of the target species (that is, a species with which the species to be removed interacts).⁴³ Various studies have shown that the presence of weak links in ecological networks stabilises the ecosystem.⁴⁴ Experiments with small-scale ecological systems have shown another important effect of weak links. Some weak links in ecological networks have been found to show great variability of interaction strength, resulting in an increased variety across time and space of ways in which the same species can compose an ecosystem. Furthermore, simulations indicate that such ecosystems play an important role in large-scale ecological stability, especially when species can migrate across neighbouring ecosystems.⁴⁵

3. *Weak links in Early Christianity*

For a study of social networks in Early Christianity, we have to extrapolate observations from a limited set of data. In this section, I will argue that various social attitudes and activities in the early Church facilitated the proliferation of weak interactions in ways that were less typical of other religions. It is in this indirect way that I argue that there were more weak links in Early Christianity than in other religious groups. A possible pitfall of such an approach is that it might overlook important ways of generating and maintaining weak social interactions in other religions. Future studies that examine weak links in other ancient religions are therefore needed to complete the picture provided in this chapter.

⁴¹ Csermely, *Weak Links: Stabilizers of Complex Systems from Proteins to Social Networks*.

⁴² Berlow, 'Strong Effects of Weak Interactions'.

⁴³ Berlow, 'Strong Effects of Weak Interactions', p. 331.

⁴⁴ Bengtsson et al., 'The Value of Biodiversity'; McGrady-Steed and Harris, 'Biodiversity Regulates Ecosystems Predictability'.

⁴⁵ Maser et al., 'Weak Trophic Interactions and the Balance of Enriched Metacommunities'.

In his book, *The Mission and Expansion of Early Christianity*, Adolf von Harnack provided an extensive list of different types of 'missionaries' in Early Christianity, recording important journeys known from different sources and correspondence among churches.⁴⁶ A very influential social-scientific model of mobility in Early Christianity has been established by Gerd Theissen, who described the interaction of itinerant charismatics and their settled sympathisers in the earliest Christian community.⁴⁷ Both of these previous studies called attention to the significance of mobility in the success of Early Christianity. Whereas they emphasised the institutional (Von Harnack) and sociopsychological (Theissen) aspects of such mobility, I will examine the influence of mobility on the creation of weak social links.

Among the writings of the New Testament, the apostle Paul's epistles provide the earliest concrete evidence of mobility in Early Christianity. From this correspondence, a picture of the apostle as an itinerant emerges, who tirelessly founded and visited Christian communities throughout Greece and Asia Minor (present-day Turkey). He maintained regular contact with Christians in Antioch (in ancient Syria), which probably served as his home base (Galatians 2), and at least occasionally visited Jerusalem (Galatians 1-2), the centre of Palestinian Christianity. Many of his epistles end with a list of greetings (Romans 16; 1 Corinthians 16), in which Paul and members of the community where the letter was written send their greetings to individuals in the community to which the letter is addressed. Since Paul moved about so much, he was prevented from maintaining many strong social links, but it enabled him to develop a great number of weak ties with individuals in a variety of geographical and social locations. Such a position could be best described as that of a between-group broker. The recurring pattern of greetings in the epistles is remarkable because it suggests that as a result of Paul's brokering activity, weak links were shaped among members of various communities who possibly never met each other.

In his epistles, Paul also refers to other visitors and itinerants. He had a number of deputies, among whom we know Silas, Timothy and Titus by name, who also travelled, carried messages and delivered (possibly also co-authored) his letters. Other apostles also travelled, some of them even taking their spouses with them (1 Corinthians 9:5). Yet another group of travel-

⁴⁶ Harnack, *The Mission and Expansion of Christianity in the First Three Centuries*, pp. 319-378.

⁴⁷ Theissen, *Soziologie der Jesusbewegung*; *Idem, Sociology of Early Palestinian Christianity*; *Idem, Die Jesusbewegung: Sozialgeschichte einer Revolution der Werte*.

lers are identified as Paul's adversaries or 'false apostles' (Galatians 1:6; 2:4; 3:1; 2 Corinthians 11). These other missionaries probably also had helpers and built social networks similar to Paul's. For example, in 2 Corinthians, Paul denounces some of his adversaries for carrying 'letters of recommendation' (2 Corinthians 3:1), which could actually contain the same kind of reference that Paul himself gives to Titus in the very same epistle (2 Corinthians 8:16-24).

From these documents, we gain the impression that the earliest Christian communities were frequently visited by itinerants, who often presented quite different points of view and assiduously attempted to undermine each other's authority. Whereas Paul's epistles, to the best of our knowledge, show us the state of early Christianity around the middle of the first century AD, an important document allows us a glimpse into the problem of itinerancy towards the end of the same century. In the communities where the 'Teaching of the Apostles' or *Didache* circulated, regular visits by a variety of different itinerants caused confusion. As a rule of the thumb, *Didache* 11 prescribes that only guests whose teaching agrees with the contents of that document (allegedly summarising the teaching of the twelve apostles) should be received by the communities. What is more surprising is the serious restrictions concerning the entertainment of visitors. Guests recognised as 'apostles' and 'prophets' were expected to stay for only one day (!), which could be extended by another day, if necessary.

Someone who remained for three days was identified as a false prophet. Apostles and prophets could take bread with them as needed until they found new accommodation, but one who took money was regarded as a false prophet. Ordinary travellers were permitted to stay for up to three days. There were also rules for officials and travellers who wished to settle in a community, but there was no medium-term visiting status. Apostles could not settle at all in the community: 'a settled-down apostle is an ex-apostle', as John Dominic Crossan put it.⁴⁸ The system described by the *Didache* kept itinerants on the move, continuously pumping them, as it were, through the social network of Christian communities. They were not able to stay in any community for more than two or three days, but were forced to proceed to another community, taking some food, but no money to sustain them for a longer period of time. Again, it seems that itinerants formed weak social ties, perhaps returning to the same community once in a while, but building no strong ties due to the temporal limits of their stay. If they settled in a community, they developed strong ties there and through weak ties connected the community to other communities.

⁴⁸ Crossan, *The Birth of Christianity*, p. 376.

The gospels of the New Testament also contain a great number of references to the itinerant lifestyle of Jesus and many of his followers. The evidence was systematically studied by Theissen and since then in various other publications. In several passages, Jesus says he has no home (Matthew 8:20), commands his followers to renounce family bonds (Matthew 10:37; 12:50; Mark 10:29-30), and his apostles to wander from town to town (Matthew 10:5-15; Luke 9:1-6; 10:1-12), carrying not even a minimum of provisions (Matthew 10:9-10; Luke 9:3; 10:4). A major problem with this evidence is that it is difficult to judge whether it provides a reliable description of the actual way of life of Jesus and his disciples, or rather reflects the lifestyle of Christians who created and transmitted these sayings and stories. The texts might also reflect unrealised ideals or completely fictional accounts rather than any actual practice.⁴⁹

Since we cannot solve this problem here, we can only come to the cautious conclusion that itinerant behaviour was practised or promoted from the very beginnings of Christianity, which allows for the assumption that weak links (potentially serving as bridges) were abundant in the social networks of the earliest Christians. It is also difficult to separate historical truth from fiction in the descriptions of travels in the canonical *Book of Acts* and the apocryphal Acts of the Apostles. Minimally, these accounts give the impression that travelling apostles were a widely known and popular type of Christian figure well into the second century AD. Finally, a less favourable image of itinerants is drawn by Lucian of Samosata in the second century AD, whose hero, Peregrinus Proteus (a Cynic philosopher who actually lived in the same century and spectacularly cremated himself at the Olympic games of 165 AD), spent some time in his career as a member of a Christian community, quickly achieving several of the highest positions among them.

Another means of maintaining weak links in Early Christian communities was the widespread practice of charity. Again, Paul's epistles provide the earliest concrete evidence on this matter. In the 'gentlemen's agreement', made in Antioch between Paul and the apostles Peter, James and John (Galatians 2:6-10), the apostles ask Paul 'to remember the poor', which he is 'eager to do'. Collecting money for the poor of Jerusalem remains an important concern during his work in other congregations (1 Corinthians 16:1; 2 Corinthians 9; Galatians 2:10). In the famous passage about the Lord's Supper (1 Corinthians 11), Paul expresses his concern about the poor going hungry while the rich get drunk at community meals. A historically less reliable but nevertheless quite informative passage in *Book of Acts* 6 describes the election of 'deacons', whose task is to assist at

⁴⁹ Arnal, *Jesus and the Village Scribes*.

the table, that is, to provide food for the poor of the Jerusalem community. Evidence about Christian charity is also abundant in the second century AD. A particular form of charity involved fasting to save money, which was then spent on charity (Hermas, *Similitudes* 5.3; Aristides, *Apology* 15).

The importance of charity for the development of Christianity has already been noted by various scholars, who assume that it was an attractive feature for potential sympathisers and converts.⁵⁰ Rodney Stark specifically emphasised the significance of Christian charity towards outsiders, considering it as a revolutionary step in the ancient world.⁵¹ However, none of these authors have assessed the impact of charity on social networks. This effect might seem negligible at first sight, since people who came for a free lunch could hardly contribute social ties that would promote the success of Christianity in any significant way. Whereas ties shaped by charity within the communities could be either strong or weak, charity towards outsiders or across communities (such as the collection in Greece and Asia Minor for the poor in Jerusalem) facilitated the formation of numerous weak ties within Christianity, as well as between Christianity and its social environment.

We have to mention a third important source of weak ties in Early Christianity, that is, the inclusion of women. It is conventional wisdom that most Early Christian sources were written from the perspective of male authors representing the values of a patriarchal society. Efforts to unearth the role of women in Early Christianity have yielded important observations about women's roles as apostles, patronesses and deaconesses in the early Church.⁵² Whereas the data is often too sparse to allow for more than speculative reconstructions, it is beyond dispute that women, in general, were present in more significant, emancipated and diverse roles in Christianity than in most contemporary religions. For example, the apocryphal Acts of the Apostles regularly mention women as the first followers of the apostles in different places, portraying many women from the upper class as influential patronesses of Christian communities.⁵³

Both the 'Gnostic' Mary (not always clearly identifiable with one of the women by that name in the New Testament) in the *Gospel of Philip*, the

⁵⁰ Riquet, *Christian Charity in Action*; Thraede, 'Soziales Verhalten und Wohlfahrtspflege in Der Griechisch-Römischen Antike (Späte Republik und Frühe Kaiserzeit)'.

⁵¹ Stark, *The Rise of Christianity*, p. 212.

⁵² King, *The Gospel of Mary of Magdala*; Brock, *Mary Magdalene, the First Apostle*; Madigan and Osiek, *Ordained Women in the Early Church*; Reid, 'Leading Ladies of the Early Church'.

⁵³ Davies, *The Revolt of the Widows: The Social World of the Apocryphal Acts*; Bremmer, 'Pauper or Patroness: The Widow in the Early Christian Church'; Czachesz, 'Wordt vervolgd: Apocriefe handelingen van de apostelen'.

Gospel of Mary, and other writings, as well as Thecla in the *Acts of Paul and Thecla* are represented as female apostles. It is, however, not so much the prominent position, but rather the massive participation of women in the movement that carries more weight for my argument. In this respect, the repeated mention of a great number of widows in the earliest documents deserves special attention. The widows of 'the Hellenists' and 'the Hebrews' (the first term referring to either non-Israelites or Greek-speaking Jews) are mentioned in *Book of Acts* 6 in the passage cited in connection with the election of deacons (where it is not certain whether the widows are performing charitable acts or are the recipients of such acts), and something like a class or office of widows is described in the *First Epistle to Timothy* (chapt. 5), a pseudo-Pauline text from the second century AD.

We know about the existence of an 'order of widows' in Carthage around 200 AD from the writings of Tertullian.⁵⁴ Widows are also mentioned in a favourable light in the gospels of Mark (12:40-44) and Luke (2:36-38; 4:26; 18:1-8). Lucian of Samosata in the *Life of Peregrinus Proteus* (chapt. 12, see above) notes with surprise the active participation of widows in Christianity. Various sources, including the gospels, the *Book of Acts*, Hermas' *Shepherd*, and the apocryphal Acts of the Apostles (*Acts of Peter* 8, 21; *Acts of John* 30-36), indicate that widows were taken good care of in Christian communities. It is quite remarkable that Christianity paid such great attention to widows, since in Greek and Jewish societies they had rather limited rights.⁵⁵

The participation of women in Early Christianity is especially relevant for the study of social networks because there are significant differences in the ways men and women use their social contacts. Studies of community websites show that men and women follow different strategies when building social networks. For example, while men seek serious relationships and dates on My Space, female members are more interested in friendships (most of which translate as 'acquaintances' in terms of weak-link theory).⁵⁶ Women also have more friends (male and female) on the network, log on more often, and typically interact with females. Another study examined the use of text messages on mobile phones and found that women expand their networks more dynamically than men.⁵⁷ Since the time, emotion, intimacy and reciprocal services (defining the strength of a social tie, see above) that

⁵⁴ Bremmer, 'Pauper or Patroness: The Widow in the Early Christian Church'.

⁵⁵ For a cognitive analysis of Jewish laws protecting widows, see Kazen, 'Empathy and Ethics: Bodily Emotion as Basis for Moral Admonition'.

⁵⁶ Thelwall, 'Social Networks, Gender, and Friending'.

⁵⁷ Igarashi et al., 'Gender Differences in Social Network Development via Mobile Phone Text Messages'.

one can invest in a social relationship are limited, having a large number of social ties necessarily means that most of them will be weak.

One may object that these observations rely on empirical data from modern societies, and might not be conclusive about the social networks of women in antiquity. However, cross-species research seems to support the idea that neurological variation between the sexes underlies some important differences in their respective styles of social behaviour.⁵⁸ Coping with stress (including attacks by predators, assaults by conspecifics, and dangerous conditions such as fire or flooding) is crucial for the survival of organisms. The standard view of the stress response has been that of 'fight-or-flight': individuals tend to fight danger when it seems manageable and flee when it is overwhelming. This kind of stress response, however, has not been adaptive for females with children in ancestral environments, as suggested by Shelley E. Taylor and her colleagues.⁵⁹ Women invest more than men in bearing and rearing offspring, particularly during pregnancy, birth and the early period of a child's life. Protecting their offspring is therefore a high priority for evolutionary reasons: a huge investment in transmitting their genes comes to nothing if their offspring dies. It is argued that mothers therefore developed the behavioural pattern of caring for their offspring as well as grouping with other women when faced with danger, which Taylor and colleagues label the 'tend-and-befriend' pattern.

Reacting to stress by reinforcing social ties has also been found in female rats, rodents and primates, and is supported by the secretion of oxytocin (a hormone enhancing relaxation) as part of female stress response. In a number of studies, mothers were found to show 'tend-and-befriend' patterns in response to everyday stress, whereas fathers typically reacted by separation and confrontational behaviour.⁶⁰ In addition to reacting to stress differently, men and women also respond to different stressors: stressors that are largely unique to men include legal and financial situations, while stressors that mainly affect women include losses in more distant networks and events such as relocation.⁶¹

⁵⁸ Taylor et al., 'Biobehavioral Responses to Stress in Females: Tend-and-Befriend, Not Fight-Or-Flight'.

⁵⁹ *Ibidem*.

⁶⁰ Repetti, 'Effects of Daily Workload on Subsequent Behavior during Marital Interaction'; Taylor et al., 'Biobehavioral responses to stress in females'; Story and Repetti, 'Daily Occupational Stressors and Marital Behavior'; Smeets et al., 'Social Cognition Under Stress: Differential Effects of Stress-Induced Cortisol Elevations in Healthy Young Men and Women'.

⁶¹ Mazure and Maciejewski, 'The Interplay of Stress, Gender and Cognitive Style in Depressive Onset'.

An important question arising from the above-mentioned line of research is whether women's use of social ties has implications for tie strength, followed by the question of whether such implications can be extended to ancient society. Women who have access to social networking websites or mobile phones can use their networking talents to generate many social ties, an increasing portion of which will have to be weak ones. However, what about women without such opportunities? In lower socioeconomic classes of contemporary societies, women have been found to rely on kin networks, fictive kin networks, friends and neighbours.⁶² These kinds of networks, however, typically consist of strong ties, and even weak ties in such networks are unlikely to be bridging weak ties, as Granovetter's studies have shown. What can we expect of women in the patriarchal societies of antiquity, whom we normally think of as being confined to their households?⁶³

The point can be made that, independently of the status of women in ancient society (which certainly also differed across socioeconomic groups), their inclusion in Early Christian communities provided them with opportunities (something of an ancient My Space) to form social ties beyond those they would have had otherwise. The involvement of higher class women was crucial, since they were likely to be in a position of between-group brokerage. As a rule, women show more affiliative behaviour in social contacts than men, whose groups tend to be more goal-oriented, competitive and hierarchical.⁶⁴ In sum, the ability of Early Christianity to create weak bridging links that connected social classes was at least partly due to its ability to mobilise the networking power of women.

4. *The impact of weak links on the development of Christianity*

In the previous sections we reviewed three phenomena in Early Christianity that were unusual among ancient religions: an institutional framework of mobility and itinerancy, high investment in charity, and the active participation of women, in combination with an unusual degree of attention paid to widows. All three phenomena enhanced the development of weak social ties in Christianity. In this section, I will outline how the presence of weak links influenced the development of Early Christian religion.

⁶² Granovetter, 'The Strength of Weak Ties', pp. 1373-1375; *Idem*, 'The Strength of Weak Ties: A Network Theory Revisited', pp. 212-214.

⁶³ Malina, *The New Testament World*, pp. 46-48.

⁶⁴ Taylor et al., 'Biobehavioral Responses to Stress in Females'.

First, the earliest documents already show an exciting diversity in Early Christian religion.⁶⁵ Weak links facilitated the interconnection of diverse cultural and socioeconomic groups, without forcing a uniform set of values, beliefs and attitudes on them. The lack of a uniform mould for every believer helped the spread of the movement tremendously, yet weak connections of several kinds generated bridging links that connected distant groups and phenomena with each other. If we compare Christianity with other widespread religions of the same era, the differences are evident. Participation in classical Greek and Roman religions focused on the correct performance of rituals, which sometimes (such as in the cult of the Emperor) meant little more than a few formal gestures.⁶⁶ Christianity, in contrast, aimed to control the entire life, thought world and emotions of its members. Another religion that had a similar, total claim on its adherents was Judaism. Judaism, however, in spite of all its diversity, imposed requirements on people that were overly tied to ethnicity and seemed difficult or undesirable for most outsiders in most social and cultural settings to fulfil.

Other successful religions were typically tailored to particular socioeconomic classes. The cult of Mithras, for example, spread quite well in the army, the administration and the urban population, but was neither appealing nor accessible to rural people, at least until its late period.⁶⁷ From a very early stage, Christianity was able to posit high requirements, yet aspire to a universal appeal: it was able to win the full loyalty of a Jewish peasant in Galilee and a Greek city treasurer in Corinth (Romans 16:23) simultaneously.

Second, given the presence of weak links within communities, diversity could develop even without substantial differences in cultural and socioeconomic settings. This can be compared to the formation of different ecosystems in Berlow's experiment (see above), where the existence of weak ties between some species allowed for the formation of different ecological networks under identical circumstances. In complex systems, slight differences in the initial conditions can lead to very different developments over time, a phenomenon that is well known in systems research in various domains such as physics, biology and sociology.⁶⁸ Elsewhere I have suggested how system theory can be used to describe religion and that it should be used to take into consideration the results of the study of complex sys-

⁶⁵ Gerard P. Luttikhuisen, *De veelvormigheid van het vroegste christendom*.

⁶⁶ Nock, *Conversion*, pp. 1-16.

⁶⁷ Laeuchli, 'Urban Mithraism'; Martin, 'Hellenistic Religions: An Introduction', p. 123; Clauss, *The Roman Cult of Mithras: The God and His Mysteries*, pp. 33-41.

⁶⁸ Nicolis and Prigogine, *Exploring Complexity: An Introduction*; Mainzer, *Thinking in Complexity: The Complex Dynamics of Matter, Mind, and Mankind*.

tems.⁶⁹ In this scenario, for example, different versions of Christianity could develop even in essentially similar socioeconomic settings.

Third, as a consequence of its socioeconomic and cultural diversity, and the use of weak links rather than a general mould to maintain such a diverse conglomerate, Christianity was able to incorporate various points of view. In the New Testament we can already find an unprecedented variety of socioeconomic and cultural perspectives, including that of rural society and the wisdom tradition in the synoptic gospels, urban social milieus and popular philosophy in the epistles of Paul and the *Gospel of John*, and contributions by aspiring intellectuals such as the author of the *Book of Acts* (possibly identical with the author of the *Gospel of Luke*), not to mention the Gnostic, ascetic, apocalyptic, millenarian, charismatic and many other branches of Early Christianity. Such diversity of backgrounds and visions allowed Christianity to conquer almost every social and cultural niche found in late antiquity. More importantly, a social network in which diverse groups are connected by weak links fosters the improvement of cognitive abilities that make it possible for people to assume and appreciate different points of view. This was a hard process, which is evident from the fierce ideological struggles already attested to in the earliest sources.

Apostles and teachers did not refrain from slandering each other and eagerly undermining each other's moral positions with aggressive rhetoric and malignant gossip (Romans 16:17-19; 2 Corinthians 3:1-4 and 11:1-15; Galatians 2:11-14 and 5:12; Revelation 2-3). Heresiology emerged as one of the most important genres of theological literature from the end of the second century. Much of this verbal warfare was not unusual in the agonistic cultural milieu of antiquity.⁷⁰ Due to the rather flexible structure of weak links, however, claims to hegemony were difficult to realise and a great variety of traditions and views were constantly in circulation, providing material and inspiration for the creation of complex and intriguing Early Christian texts such as the apocryphal *Acts of John*, the works of Origen, or various writings in the Nag Hammadi library, to mention only a few random examples from the first two centuries of Christian history.

Fourth, the variety of experiences and visions, as well as the range of theological and moral points of view as documented in literary traditions, enabled Christianity to adapt itself to new circumstances across space and time. An analogy can be taken from biological species, where the presence

⁶⁹ Czachesz, 'The Emergence of Early Christian Religion: A Naturalistic Approach'; *Idem*, 'The Evolution of Religious Systems: Laying the Foundations of a Network Model'.

⁷⁰ Opelt, *Die Lateinischen Schimpfwoerter und Verwandte Sprachliche Erscheinungen*; Lampe, 'Gewaltige Worte Werden Gewalttätig'.

of diversity in the gene pool allows for accommodation to new circumstances.⁷¹ It is precisely weak interactions in the living cell that make the accumulation of genetic diversity possible, without a corresponding diversity in the phenotypes (the characteristics of individuals). Without pressing the biological analogy too far, we can hypothesise that the accumulation of diversity in earliest Christianity, due to the presence of weak links already in Late Antiquity facilitated the accommodation of the new religion to a variety of new cultural settings, as far as Armenia and India in the east and Ethiopia in the south. In spite of the cultural changes that undermined the Christian world-view in several ways and the constant appearance of religious competitors, Christianity has remained dominant in the modern West.

An important counterargument against the perceived vitality of Christianity since antiquity refers to the obvious role of political power in maintaining the dominance of the Church. Whereas Christianity was born in an era of a kind of cultural and religious free market, that period came to a close when Christianity was adopted as the State religion of the Roman Empire, and it was not until very recently that a comparable free competition of religions re-emerged in Western history. Discussing such an overarching historical perspective is not the task of this chapter. It has to be noted, however, that the very adoption of Christianity as a State religion was due to its vitality, inasmuch as it was better able to appeal to a wide range of socioeconomic and cultural groups than many of its competitors. Without this potential, it would have hardly been a likely candidate for such status.

Fifth, the social network structure of Early Christianity facilitated the emergence of cognitively optimal beliefs. A shortcoming of traditional weak-link theory has been the lack of content, that is, the absence of explanations about the kind of information that flows through weak ties in a social network.⁷² In this final section, I suggest that weak links in Early Christianity particularly served the flow of new ideas that ultimately resulted in the formation of cognitively optimal beliefs. In cultural transmission, some ideas fare better than others due to their memorability and their power to motivate people to transmit them. A good joke is memorable and motivates people to share it with other people as a way of gaining attention and appreciation. A popular tune is memorable and motivates people to sing, whistle or play it. This aspect of cultural transmission has been explained by different models, including memetics (R. Dawkins) and epidemiology (D. Sperber).⁷³

⁷¹ Csermely, 'Weak Links: Stabilizers of Complex Systems from Proteins to Social Networks', pp. 139-150.

⁷² Granovetter, 'The Strength of Weak Ties', p. 1378.

⁷³ Dawkins, *The Selfish Gene*; Sperber, *Explaining Culture*.

Religious ideas are especially successful because they incorporate an optimal number of counterintuitive elements, that is, details that violate expectations about cross-culturally attested ontological categories.⁷⁴ Elsewhere I have shown how the mainstream version of Jesus' death and resurrection can be explained by its emergence as a cognitively optimal, minimally counterintuitive version of the Jesus story.⁷⁵ The emergence of this idea, and others which are similar, such as the talking or otherwise human-like animals in a range of Early Christian texts,⁷⁶ requires innovations that create new concepts, as well as repeated transmission that helps the selection of the most successful ones. The presence of weak links helped Early Christianity to realise both of these preconditions and thereby develop cognitively optimal ideas.

On the one hand, the presence of weak ties among groups with different views and traditions helped individuals who can be characterised as between-group brokers to come up with new insights; on the other hand, the rapid circulation of such innovations was enabled by the existence of weak links, which in turn facilitated the selection (in the sense of memetics) or formation (in the sense of epidemiology) of cognitively optimal variants. The difference between minimally counterintuitive ideas (discussed in this section) and adaptations to changing sociocultural environments (discussed in the previous section) is that whereas the latter require the modification of beliefs, institutions and norms, the former will be privileged in virtually any sociocultural setting.

In summary, the success of Early Christianity was due to the combination of some cognitively optimal, culture-independent traits and the ability of the new religion to adapt itself to changing socioeconomic and cultural environments. The emergence of both features was made possible by the presence of bridging, weak social ties, which in turn evolved due to the social attitudes of Early Christians towards women, charity and mobility.

⁷⁴ Boyer, *The Naturalness of Religious Ideas: A Cognitive Theory of Religion*; *Idem*, *Religion Explained: The Evolutionary Origins of Religious Thought*; Boyer and Ramble, 'Cognitive Templates for Religious Concepts: Cross-Cultural Evidence for Recall of Counter-Intuitive Representations', p. 535.

⁷⁵ Czachesz, 'Kontraintuitive Ideen im urchristlichen Denken'; *Idem*, 'Early Christian Views on Jesus' Resurrection: Toward a Cognitive Psychological Interpretation'.

⁷⁶ Matthews, 'Articulate Animals'; Czachesz, 'The Eagle on the Tree: A Homeric Motif in Early Christian and Jewish Literature'; Gilhus, *Animals, Gods and Humans*; Czachesz, 'Speaking Asses in the Acts of Thomas'; Spittler, *Animals in the Apocryphal Acts of the Apostles*.

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