

Church Growth via Enthusiasts

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Abstract

In many parts of the world the Christian church is growing substantially through conversion, whereas in the West the older denominations are declining sharply. This model seeks to explain these different growth patterns through the activity of “enthusiasts” within the church, who alone are responsible for the conversions. Assuming these enthusiasts are new converts, only active for a limited period of time, it is found that the key to church growth or decline is the ability of the enthusiasts to reproduce new enthusiasts. If this reproduction potential is too low the church becomes extinct, whereas, if it is sufficiently high, church growth is rapid, similar to an epidemic. The model is extended to allow enthusiasts to reproduce themselves from among the inactive church members, showing that even a moderate “re-infecting” of church members with enthusiasm can give a dramatic shift from decline to growth in the church.

Church Growth via Enthusiasts

Why Model Church Growth?

Significant Social Movements

- **Rapid growth in many Asian, African and South & Latin American countries**
- **Long decline in Western Europe**
- **Continued strength and influence In USA, Canada and Australia**

Why Model Church Growth?

1 Churches Want to Grow

By its nature a church is an organisation that wants to grow. Whereas most clubs and societies would be happy with a healthy membership, a church will want to go further and see as many converted and in its midst as possible, as it believes it is doing this for the good of those people. “The church is the only organisation that exists for the benefit of those outside itself”

2 Church is a Significant Social Movement

Churches are rapidly growing in many Asian, African and South & Latin American countries, so much so that they affect the fabric of the life of the country. For example in Nigeria extensive church building affects the development of its cities and towns. Indeed one church has a combined attendance of one million at its monthly weekend conventions, making a huge impact on Lagos. In China the rapidly growing underground church is a constant thorn in the side to the authorities.

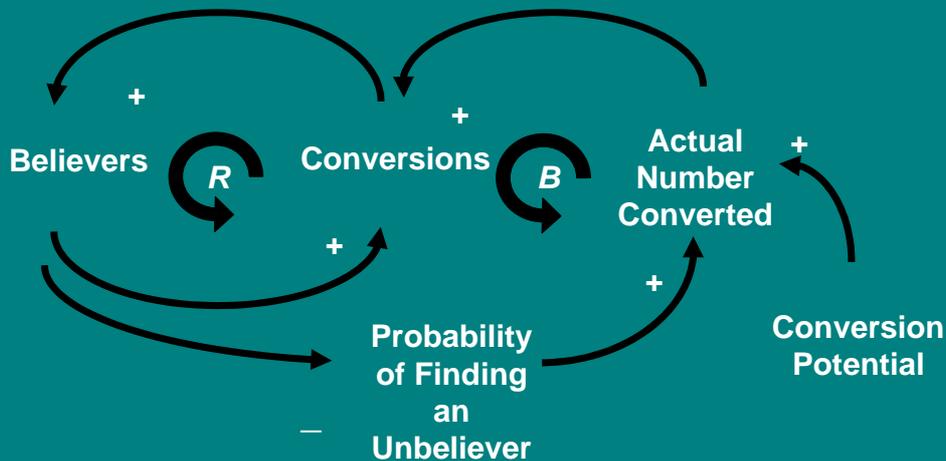
Conversely churches are declining in western Europe, leaving countries with the vestiges of a Christian culture, but without strength in the churches that once shaped that culture. For example church attendance in England has dropped from 30% to 7% in one hundred years, raising questions about the UK’s Christian constitution. Some historic denominations, such as the Methodists, will effectively cease to exist in 20 years.

Yet this decline cannot be just attributed to the secularisation hypothesis, which states that interest in religion declines as nations become more “advanced”. The continued strength of the church in the USA, Canada and Australia, shows that vibrant church life and economic and social development can co-exist.

Thus a model is needed that helps to understand how churches grow and decline. Such a model may help suggest strategies to promote growth and combat decline

Church Growth - Conversion

Diffusion: Contact between believer and unbeliever



What Causes Church Growth?

Answer 1 Conversion

Conversion is the process where a person who has no commitment to a church or religion (an unbeliever) changes to espouse the cause of their new found faith (a believer). The model assumes that the conversion occurs because of a contact between a believer and an unbeliever. Either the believer leads the unbeliever to a commitment or takes them to a meeting where such a commitment occurs. Extensive evidence from pastoral sources shows that very few unbelievers start attending church through advertisement alone. Usually some personal contact is involved. Advertisements are largely aimed at existing believers transferring church.

The driver of the growth is a reinforcing loop, more believers giving more conversions etc. This growth is slowed and limited by a balancing loop because the probability of finding an unbeliever is reduced as the number of converts increases. This is due to the shrinking pool of unbelievers. This system is the classic diffusion model with homogeneous mixing. Mathematically it is represented by the Fisher-Pry model, a subset of the Bass model. The equations are equivalent to the logistic model.

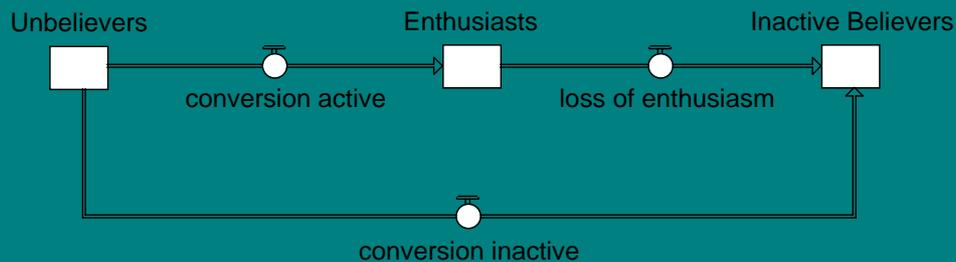
From a systems point of view this is a limits to growth archetype, resulting in S-shaped growth as the system shifts from reinforcing dominance to balancing dominance. Growth stops when the whole population is converted.

The speed of the conversion process is governed by the "conversion potential": how many unbelievers a believer would convert (per unit time) given that the whole population are unbelievers. Because churches are usually embedded in large communities this potential is independent of population size. The number of contacts a person has is limited by the size of the friendship network they can hold down, not the number of people in the community. This is called the "fixed contacts" model in epidemiology.

Limited Enthusiasm

Enthusiasts

- Subset of believers involved in conversion
- New converts
- Lose ability to recruit



Fundamental Assumption: Limited Enthusiasm

The fundamental assumption of the church growth model is that only a subset of believers are involved in the conversion process, and only for a limited period of time. These will be called the enthusiasts, following the nickname given to the early Methodists. The remaining believers, called the inactive believers, play no part in the conversion process.

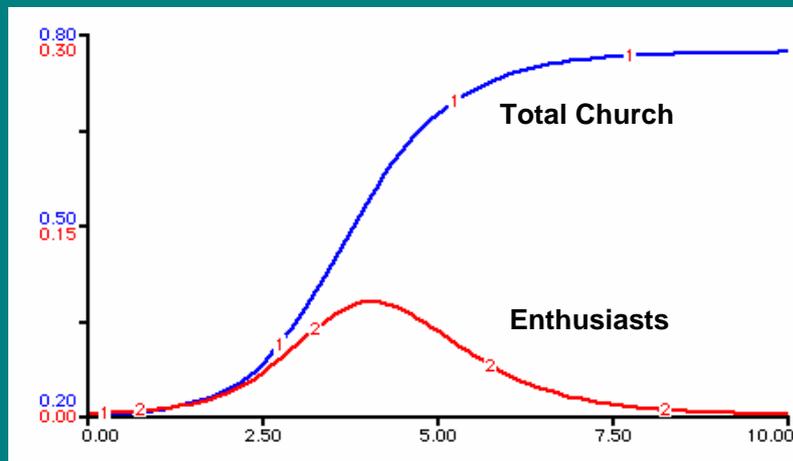
It will be further assumed that only new converts become enthusiasts as they usually have an extensive network of unbelieving friends and relatives. However they eventually lose their influence in this network, either because they exchange unbelieving friends for ones in the church following their new lifestyle; or because all their friends become converted themselves; or because their friends become hardened to conversion as they get used to the new convert's ways. In addition many new converts get increasingly involved in church life at the expense of their recruitment activity, sometimes gaining status as well. Some simply run out of zeal for their new faith

It is also assumed that not all new converts become enthusiasts. Some people are too shy whereas some are secondary conversions usually following a spouse into the church

The model is now a variation of the Kermack McKendrick SIR epidemiology model, where some susceptibles can bypass the infected stage.

An example of limited enthusiasm in church life is given by the Alpha course – a ten session course in the basics of the Christian faith. The course consists of a leader, helpers and course participants. Those participants who become converted (including some who are returning to church after some gap) are encouraged to become helpers on subsequent courses and bring their unconverted friends along. This often continues for a few courses before a person eventually drops out from the course.

S - Shaped Growth



- Growth stops for lack of enthusiasts
- Not all of society converted

Results

The graph shows the S-shaped growth in the total church numbers due to the shifting loop dominance in the diffusion process. However the number of enthusiasts peaks and then declines to zero as the church finds it harder to make new enthusiasts in a shrinking pool of unbelievers in order to replace those who lose enthusiasm.

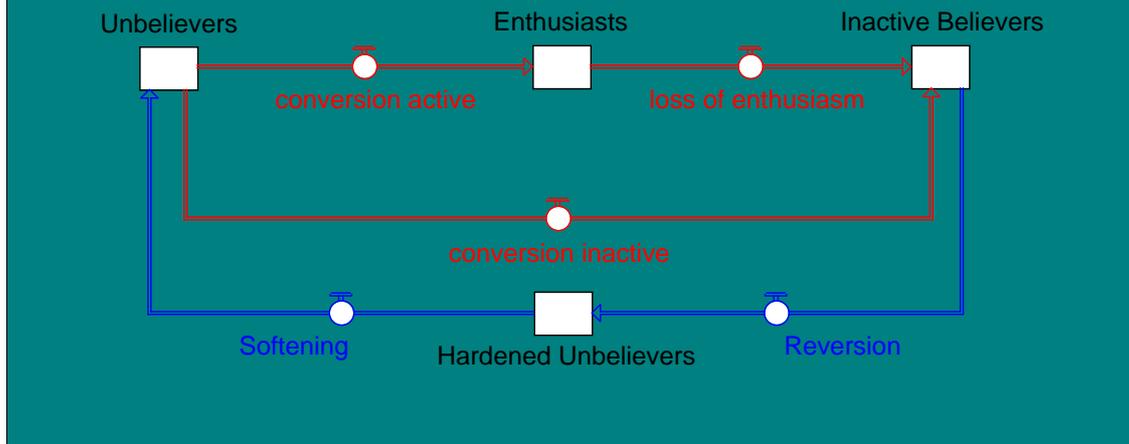
Thus the growth of the church is limited, falling short of the conversion of all the population. Growth stops because the number of enthusiasts has run out, just as an epidemic stops because the number of infected runs out.

The key parameter is the reproduction potential: the number of enthusiasts that could be made by one enthusiast during their enthusiastic period, given the whole of society are unbelievers. If this reproduction potential exceeds a threshold which depends on the number of available unbelievers, then their number increases and the church growth is rapid. Because such growth is often seen in revivals, it is referred to as revival growth.

An example of such revival growth is the 1904 Welsh revival, where 100,000 adults were converted in the space of 15 months. The Welsh churches normal annual increase of 1% was replaced by an 11% annual increase. However the number of conversions, and the special meetings associated with them peaked mid way through the revival and eventually ceased by the end of 1905. Although many churches were transformed, the revival burned out for a lack of enthusiasts.

Longer Term Processes

- Births and Deaths
- Reversion



Why Do Churches Grow?

Answer 2 Births

Churches also grow because they retain the children of members. In once sense they need to be converted, but their contact with the church is through their upbringing, not an individual believer. They usually formally join a church in the teens and their addition to membership will help enhance the growth of the church. A church is one of the few organisations that involves the whole range of age groups. Addition by births is a longer term process than addition by conversion.

Why Does a Church Decline?

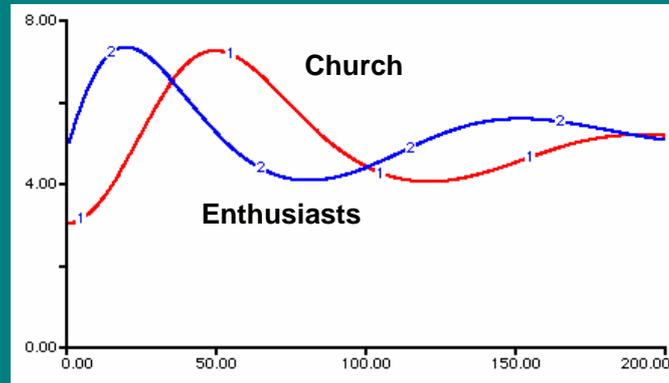
Answer 1 Deaths

Churches will decline as people die. As long as the church reflects a stationary or growing population, then deaths will only result in decline if the number of children retained is insufficient to match the number of deaths. None of the birth, death and child retention details are in the outline model above.

Answer 2 Reversion

That is adults who leave. The diagram above only shows inactive believers leaving, however the model also allows for active believers to leave. Many people who leave church end up returning at some point in the future. At least 50% eventually, however the average length of return time is about 10 years. Thus the model allows for a category of hardened unbelievers, not open to conversion, before reverts are returned to the unbeliever category.

Equilibrium



- **Reproduction Potential**
- **Fraction of Converts “Enthusiastic”**
- **Duration of Enthusiastic Period**
- **Adult Reversion Rate**
- **Fraction of Children who Leave**

Results

1 Equilibrium

The church numbers will eventually stabilise out to an equilibrium value short of the total population. Now it is the losses as well as the limited enthusiasm that prevents the conversion of the whole of society. Reducing losses will raise the equilibrium. With sufficient losses the equilibrium may be zero.

2 Phase lag

The number of enthusiasts starts rising well before the rise in church numbers. Thus the spiritual renewal that can cause church growth can be well underway long before the rise in attendance or membership can result. In particular the number of enthusiasts peaks well before the growth stops. Thus advanced knowledge of the end of a growing period could be obtained leading to new strategies to sustain growth through increasing the growth of enthusiasts again.

3 Long Time Period

The time period over which growth takes place can be many generations, due to the dominance of long term processes such as births and deaths. In reality equilibrium may not be achieved in a period over which the parameters remain constant.

Main Parameters

Reproduction Potential: How many new enthusiasts one enthusiast makes during their enthusiastic period

Less than 1 cannot be enough, Usually needs to be 1.1 to avoid extinction. 1.3 significant

Fraction of Converts “Enthusiastic”: This number is unknown.

Duration of Enthusiastic Period: From social network research this is around 2 years.

Adult Reversion Rate: Churches estimate anything from 2% to 6% per year

Fraction of Children who Leave: At one time this was less than one third. Estimated at 50% in the early 1990's in the UK. Probably larger now.

Thresholds for the Reproduction Potential

Revival Growth

Depends on other parameters and number outside church

Extinction

Depends on other parameters

Extinction Threshold

There is an extinction threshold whose value depends on the reversion rate, child loss, duration of enthusiastic period etc. If the reproduction potential is above this threshold the church survives – the enthusiasts can sustain themselves. Below it the church will go extinct. The threshold is higher if the losses are higher, requiring a larger reproduction potential to survive.

In a growing population there is a separate and higher critical threshold. Between the two threshold the church will survive extinction, but its growth will be slower than the surrounding society with its proportion of society tending to zero.

Revival Growth Threshold

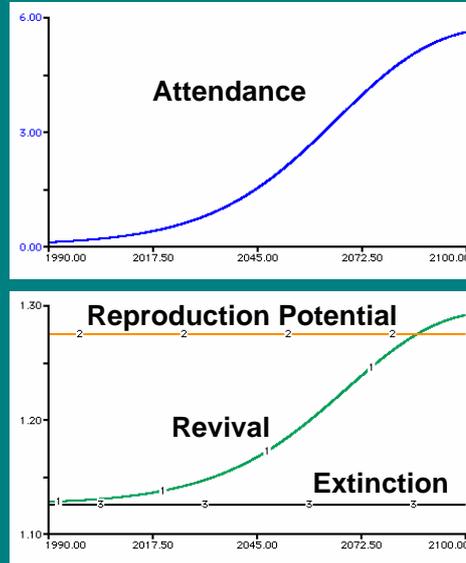
Above this threshold the church will see rapid growth similar to a revival. The number of enthusiasts will be increasing. However the threshold depends on the number of available unbelievers as well as the other parameters. Thus as the church grows the revival threshold rises until it is equal to the reproduction potential and equilibrium occurs. Some times growth can overshoot before equilibrium is achieved. The revival threshold can be lowered if losses are reduced.

Thresholds - Revival

**“New” Churches
England
1990 - 2100**

**Reproduction Potential over
Revival Threshold**

**Revival threshold rises as
church gains people**



Example of Church Over Revival Threshold

The “new” churches are a collection of largely charismatic churches, which started in the 1970’s – 1990’s. Many started in houses and were thus called house churches. Many are independent. Some are grouped together, denominations in the making, such as New Frontiers International, Vineyard, Icthus and Pioneer. Numerical data is from Christian Research.

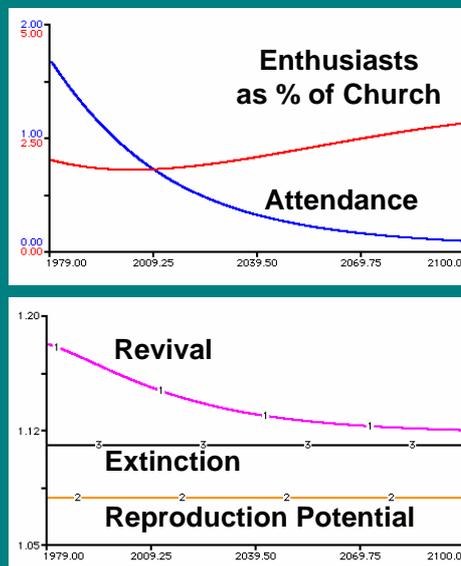
The revival threshold is well below the reproduction potential giving substantial revival growth. If parameters remain the same then growth will continue until the end of the century before burning out. Although it is unlikely that the losses and reproduction potential could be constant over this period, nevertheless it gives some idea of the strength of the growth of these churches. Most of these churches use the Alpha course or something similar.

Note the revival growth threshold rises in line with the rise of the church, as the pool of unbelievers shrinks.

Thresholds - Extinction

Church of England 1979 - 2100

Reproduction Potential under extinction threshold



Example of Church Under Extinction Threshold

The church of England is the established church in England and has the largest attendance of any protestant church. Its reproduction potential is below the extinction threshold thus, if the parameters remain the same, its extinction will eventually follow. It will have fallen from about 1 million attendance at the beginning of the century to a mere 80,000 by the end. Although not extinct it would have a very different nature compared with the last three hundred years.

Of course there are growing congregations in the Church of England, especially those that use the Alpha course and other similar process evangelism courses. The Alpha course originates in a London Anglican church from where it is still run. However the growing congregations are currently swamped by the decline of the bulk of the church. On the positive side the London dioceses is showing some signs of growth again and it is not unreasonable to assume that the same growth seen in the new churches will become dominant in the Anglican church avoiding its extinction. Of course such a church will be very different from that of history.

Even though the Church of England is declining its *proportion* of enthusiasts is getting larger, as the enthusiasts do not decline as fast. Thus it is possible the average congregation could “feel” livelier despite the decline. An increase in the feel of life in a church, however it is measured, is not sufficient to prove that a church is recovering.

English Churches

Church	Rep. Potential	Enth. Period	Reversion	Enthusiasts	Status
C of E	1.08	2.4	4%	2%	Extinct
Methodist	0.75	2.4	3.5%	6%	Extinct
Catholic	1.025	2.1	3%	6%	Extinct
Baptist	1.15	2.05	2.5%	1.6%	Slow Revival
New	1.275	2.6	4%	11%	Revival

Data Fitting

The figures quoted above were achieved using non-linear least squares on Christian Research's church attendance surveys, with other parameters estimated from other sources. The purpose was to get an estimate of parameter values for different denominations, rather than prove the model correct. It is interesting that the enthusiastic period comes out near 2 years, a figure often quoted for exchange of friends in social networks and by church pastors for new converts.

A simpler model where all believers were enthusiasts was tested by NLS however the optima produced large variations from the data points. This is not surprising as the limited enthusiasm model is giving enthusiastic periods of about 2 years.

Parameter values with confidence limits would be more useful. This is currently under development.

Anglican

The Church of England is below the extinction threshold however it would just survive if child losses stemmed.

Methodists

The Methodists are well under the extinction threshold and would face that fate eventually, whatever the losses. This model does not predict extinction of the Methodists until well into the century, however their membership figures follow a straight line predicting extinction by 2025. Straight line decay is consistent with a population whose decline is dominated by the aging process, a feature not accounted for in this model.

Baptists

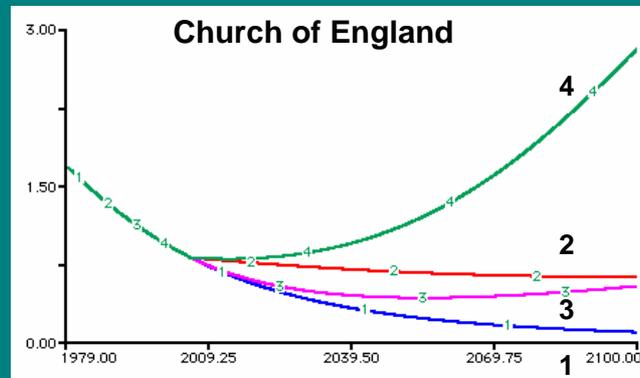
Baptists are seeing a slow revival due to an increase in attendance in the latest church attendance survey figures. More data is required to be sure of this result.

New

These parameters were fitted using estimates of attendance through the 1990's. On these estimates they will pass the Methodists by 2010, Baptists by 2020 and the Church of England by 2025. Thus in the midst of church decline there is evidence for the early stages of a spiritual renewal.

Prospects for a Declining Church

1. Predicted Decline
2. Half losses
3. Reproduction Potential to Baptist figure
4. Both Effects



Changes from 2005

Prospects for Declining Church

Curve 1 shows the predicted decline for Church of England. The simulation model allows the impact of different strategies to be investigated.

If the church could half all its losses, perhaps by better follow up for young people who move away from home, and small group pastoral structures for adults - then the church would survive (curve 2). The effect is immediate but does not bring recovery to the church.

The main problem with the Church of England is its poor reproduction rate. If it could increase this to a similar value as the Baptist figure, perhaps by a greater involvement in process evangelism, it would recover slowly (curve 3). However this is not fast enough to be practical.

If both policies are applied together the effect is substantially bigger than the sum of the two policies. Thus a solution for a declining church should involve a range of policies that lower the thresholds and increase reproduction of enthusiasts.

Fast Revivals

Revival	Rep. Potential	Enth. Period	Change in church	Duration Of Revival	No of Converts
Wales 1904 Whole Church	2.02	1 - 2 weeks	48.9% 53.4%	15 months	100,000
Calvinist Methodist	2.25		12.1% 13.2%		15,854
Baptists Nagaland	1.43	4 months	26% 43%	6 years	85, 935

Short Term Revival

As well as long term revival growth the Christian church also sees short-term revival where many people are converted in a short space of time and whole communities are affected. Wales saw 16 such revivals from the 1730's up to 1904. The increase in membership for the 1904/5 revival is well documented as are its effects on the community. A best fit of data to the church membership figures show that the reproduction potential was much larger than normal, a figure of over 2. With almost half the adult population attending church the revival threshold was 1.96, thus a large reproduction potential was needed to see revival growth.

Note also the enthusiastic period is much shorter, which could explain why the revival burned itself out in 15 months. After that period the church had risen to 53.45 of the adult population.

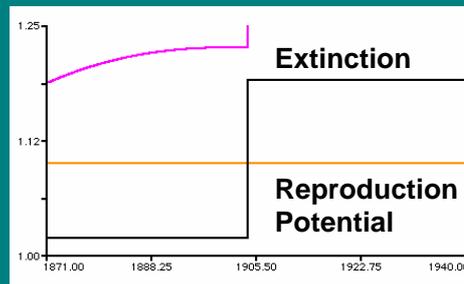
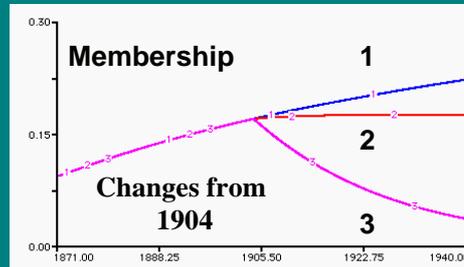
An even larger reproduction potential is obtained for the largest denomination at that time, the Calvinistic Methodists, which was at the centre of the revival. This can be compared with an estimate of the reproduction period for this denomination for the thirty years leading up to the revival, from the excellent membership figures for that denomination. Remarkably it had only a similar reproduction potential to the Church of England now, thus the 1904 revival saw a huge change in the nature of enthusiasts within the church.

Data for revivals can be hard to come by, counting people is not a high priority when there are so many conversions. However a revival among Baptists in Nagaland, a north eastern state of India, saw that church rise from 26% to 43% of the Christian community, the majority community in the state. This was a longer revival giving a larger value to the enthusiastic period.

Low Reproduction Cause of Current Decline

Welsh C. Methodists

- Late 19th Century
 - Small Losses
 - Low Reproduction Potential
 - Sustaining itself 1.
- Losses at current levels
 - Child Losses 2.
 - & Reversion 3.



Possible Cause of Church Decline in the West

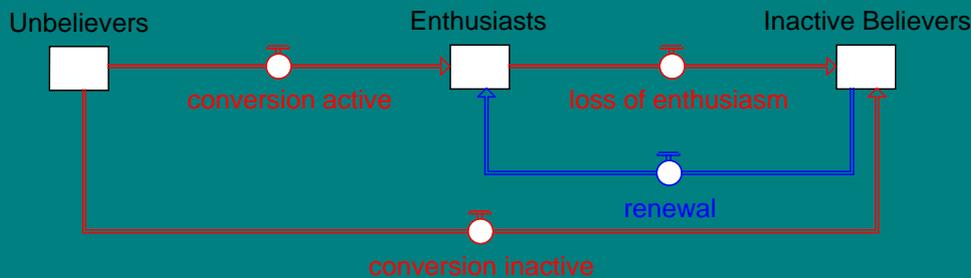
The hypothesis is that the primary cause of church decline in Western Europe is the low reproduction of enthusiasts within those churches. Although losses also cause decline, growing churches have similar losses. Indeed data fitting to countries where the churches are rapidly growing show quite large amounts of reversion from the churches. Growing churches are usually very volatile.

Church decline only became serious from the 1950's onwards. However the low reproduction potential appears to go back to the late 19th century as has been seen with the Welsh Calvinistic Methodists. Before the 1904 revival their reproduction potential was no different to the Church of England's now. The reason they were growing is that they had very few losses of either children or adults. Thus the extinction threshold was well below the reproduction potential. Had the revival not taken place that church would have continued growing in line with the overall population (curve 1).

If instead that church had had the same child losses as the current Anglican church then its growth would have stopped (curve 2). If it had also had the same adult losses as the Anglican church, its decline would have been rapid. Instead it was another 50 years before these losses came in, exposing the inadequate reproduction rate of the church.

It would appear that a church that had once grown through conversions had moved from an outward looking mission organisation to an inward looking one, able to keep its own for a time but making no impact on the world. By the time the losses came it was too weak to bring about a recovery in its reproduction. This type of organisational evolution from strength to weakness within a church is well known.

Renewal of Inactive Believers



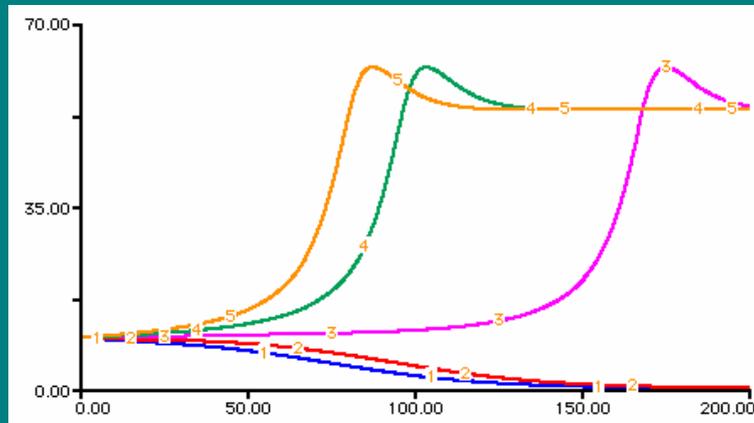
Renewal of Inactive Believers

One weakness with the model, is the inability to make enthusiasts out of existing inactive church members. Often believers retain a network of unbelieving friends but their influence has ceased because their friends have got used to their religious behaviour. However things can happen in the life of a believer that radically changes their spiritual life. This, and the associated lifestyle changes, become noticeable to their friends and the influence on them starts again, or perhaps for the first time. This process is often called renewal in the Christian church.

Like conversion, renewal often comes about through contact; this time between a believer and a “renewed” believer. If the assumption is made that all renewed believers are enthusiasts in the recruitment sense, and that all enthusiasts can help renew the faith of inactive believers, then there is a flow from inactive believers back to enthusiasts.

Like the conversion process, renewal is a diffusion process with shifting loop dominance. However saturation occurs when all the church is reached rather than all the community. Also the renewal potential, unlike the conversion potential, is dependent on the size of the church rather than a constant, at least for small to moderate size churches. This is because the wider church is split into smaller congregations thus the number of people who can be influenced is not limited by the size of a possible friendship network but by a smaller number, the size of that congregation. If the wider church grows, generally the congregation also grows, thus more people can be influenced. In addition as the wider church grows, renewal movements start between churches, both city-wide, and country-wide, thus widening the influence of renewed believers. People open to renewal often seek out such organisations. This lack of constancy of the renewal potential is called the crowd model in epidemiology.

Renewal Lowers Thresholds



Survival and revival possible with critical mass of enthusiasts

Results of the Renewal Process

Increasing renewal lowers the revival threshold, though not the extinction threshold. For a church that can already sustain itself renewal can tip a church into revival growth. Historically most revivals start as renewal movements within the church.

For a church whose reproduction is so low, and losses high, that it is heading for extinction it opens up the possibility of being above the revival threshold even though it is below the extinction threshold. Thus there are two stable equilibria, as indicated in the graph above. Which of the equilibria the church heads toward will depend on initial values. If the church has sufficient enthusiasts and/or is of a sufficient size then the extinction point will be avoided and revival growth will take it to a non-zero sustained value. This equilibrium value may well be very high, thus a critical mass of enthusiasts and church members can make a huge difference in the final outcome of the church. The concept of critical mass is observed by church planters.

The roots of the critical mass phenomena lies in the contrast between the fixed contacts and crowd model of the two diffusion processes, and does not depend on the exact form of the renewal potential's dependence on church size.

It should also be noted that a small change in either the reproduction potential or the renewal potential can make a huge difference in the behaviour of the church if it is near the revival growth threshold.

Introducing renewal is good strategy for a church, in comparison to increasing the reproduction potential as it already had the contacts with its own people. As can be seen the renewal leads naturally to the reproduction of enthusiasts, and eventually to conversions through personal contacts. Renewal, rather than straight evangelism, could be the key to church growth for many churches.

References

As a conference paper there are no inline references. However most of this work is discussed with full references in the following papers, and on the website www.church-growth-modelling.org.uk

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