

CEA

PERSPECTIVE

The Journal of the Christian Engineers' Association

Winter 2008/9

The Church

Engineering

Science

Technology

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Aims of the Christian Engineers' Association

1. To link Christian engineers and help them to maintain a consistently Christian stance in their work.
2. To enable Christian engineers to develop a thought-out Christian approach to professional issues.
3. To encourage Christian engineers to exert a constructive Christian influence in the engineering profession.
4. To support and encourage Christians who are entering the engineering profession.
5. To supply insight to engineering related missionary work.

Please send contributions for the next issue of the Journal to Mike Cowan at the address above before 15th February 2009.

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Editorial

Mike Cowan

Your committee offer apologies for the delay in publishing this edition of Perspective.

John Baden Fuller has decided that it is time for him to relinquish the tasks of Chairman and Editor, but the good news is that the committee now has six members and John has agreed to remain on the committee as President. A summary report of the last two meetings of the committee is included in this publication. Please find time to take note of the issues raised and pray that the CEA will fulfil its role. If you have suitable photos of engineering subjects for the new website we are developing please let us have them.

As the new editor I offer my very grateful thanks to John for his leadership – and hard work – over many years and I hope that we can write a fuller appreciation in the next edition of the journal.

This edition includes articles that introduce three organisations that should be of interest:

- Transform Work UK
- The Faraday Institute for Science and Religion
- Biocentre – Centre for Bioethics and Public Policy

I hope that articles like these will help busy engineers to gain an insight into what other organisations are doing. All three have websites to allow further research.

In addition to two theological articles there is copy of a correspondence between Tony Fletcher and a young Christian man considering the value of an engineering training. It highlights for me one of the possible roles that the CEA can fulfil.

Please feel free to offer comments on our journal and to provide articles for future editions. You may contact myself – mike@christianengineers.org.uk , but large picture files for the website should be sent to paul@christianengineers.org.uk

The Church – God’s Great Idea

Michael Green

Editorial note: This article has been reprinted from a UCCF publication where references to students are particularly relevant. It is easy to translate this into situations in which we find ourselves.

There are few areas where Christians are more confused than over church. Is it a building? ‘I’m going to St. James’ – anyone coming with me?’ No, it’s not a building (though a building helps especially in our climate!) Is it an hour or so a week?

No way. That’s far too small an understanding of church. Is it a voluntary society? No. There’s much more to it than that. Is it a pastor? ‘Hey, Bill, I hear you are going into the church.’ They mean ‘Are you going to be ordained?’ Bill’s proper response should be, ‘I am in it already.’

What is the church? I want to give you just one snapshot. You’ll find it in 1 Corinthians 12, though the full teaching of the New Testament is much richer than that.

Christ’s body on earth

Paul tells the fractious, individualistic, but lovable Corinthians that the church is Christ’s body on earth. It is not just like a body, it is his body. ‘Now you are the body of Christ and individually members of it’ (1 Cor.12.27; cf. vv. 12-14). Think about that for a moment. It is through your body that you express your personality. I can’t see the inner you – only the body that projects the real you for others to see. It is like that with the risen, ascended Jesus Christ. We can’t see him. He expresses himself through his body – the church. The church is God’s great idea, his settled, brilliant plan for all time. The church is Christ’s body to express his life.

God wants the fragrance of Jesus to be brought by His people wherever they go and especially whenever they gather together. It is the members of that body, not the pastor or the building, who make up the body of Christ, the instrument he left behind in the world to show people what he is like. That, and no less, is God’s great idea.

What a privilege! What a responsibility. It means that our Monday to Saturday life is just as important as our Sundays: no, it is more so. Folk are entitled to judge the inner spirit of Christianity by what they see in the body, the church. I wonder what idea people get of the unseen Lord from the way the body behaves?

The body – what does it imply?

Several things stand out in this remarkable chapter.

Interdependence

Hand and eye work together to hit a nail into a plank of wood. Arm muscles that appear opposed to one another (as in the upper and lower arm) are actually complementary, working together to lift a weight. It is meant to be like that in Christ's body.

Christianity is not a solo trip. We need each other. No part of the body has all that is needed. No part of it is useless or unimportant. We belong together.

Harmony

As the apostle Paul develops this image, he makes it plain that God wants real interdependence in Christ's body, the church. There is no room for jealousy between the various limbs: 'Because *I am not an eye I do not belong to the body*' (v, 16). There is no room for pride: '*The eye cannot say to the hand I have no need of you*'(v.21). God wants harmony, not division, in the body. He wants the limbs to care for one another (v. 25), not to have division in the body.

Ministry

We tend to restrict this complex word to pastors or senior politicians. But no: every limb, every toe has a job to do, a ministry. You cannot be a Christian at all without having a ministry. Have you found out what your main ministry is? It is important. Often others can help you to realise what Christian at all without having a ministry. Have you found out what your main ministry is? It is important. Often others can help you to realise what it is, so don't be afraid to ask them. God has prepared you for particular ministries. And when every part is working properly the body grows in usefulness and vitality – and probably in numbers too (see Ephesians 4.16).

The body – what are the ailments?

Now that's a good question, because many churches are clearly unwell. Disease is often rampant in the Christian body – disease in doctrine, in morals and in relationships. It has to be dealt with if we are to count for Christ. Consider some of the diseases in a human body.

Prosthesis

A set of dentures, a glass eye, an aluminium leg! These all give the impression of being part of the body but they are not. Many churches have people like that, people who give an impression of being Christians, but have never got linked up with Christ, the head.

Amputation

An amputated hand is no good. It needs to be part of the body if it is to operate properly. And it is like that in the church. People who cut themselves off from the church rob themselves of fellowship and stimulus, and rob the community of their support. 'I can worship God on a mountain bike' they say. So can I. But I also need conscious partnership with the other limbs, if the body is to work properly.

Elephantiasis

With this illness, one part of the body swells up to a size it was never designed for. It's always a mark of disease when that happens. So it is when one person in a church, whether it is the pastor, the organist or the chief flower arranger, gets too big for health.

Atrophy

No exercise. You only have to stay in bed for a week and you will find you can hardly walk when you get up! Your muscles have wasted (atrophied) through disuse. Lots of people merely 'come to church' on Sunday. That's heresy! You don't come to church, you are [part of] the church, and God has a job for you to do. There are not meant to be atrophied limbs in the body of Christ, no drones in his beehive, no passengers on his ship. Use whatever image you like, but get stuck in.

Fractures

You know what agony it is when even something as small as a little finger gets broken. Well, it often happens in church. People pretend that all is well, but it isn't. A church where there are warring parties and fractured relationships is no use to the Lord. There has got to be reconciliation, however hard it may be to take the first step.

The body – how should it operate?

Start right

The New Testament is very clear on how we become parts of the body. You see it in this chapter. There are three sides to it. Baptism is the churchly side, the public and visible side (v.12). Repentance and faith is the personal side (vv.2, 3). And the gift of God's Holy Spirit is the divine side in Christian initiation (vv.3, 12). Those three are like strands in a rope. We need all three. They belong together, although they may occur at different times in our experience.

Use your gifts (w. 4-6)

The Lord gives to each of us gifts of grace (vv. 4,6) and they are for service (v.5) – using the energy he supplies, by the way, not just in our own strength (v.6). Don't insult the Lord by claiming that you do not have any gifts. You do! Find out what they are and use them in the Lord's service to build up his body, the church. They are not for your own gain and enjoyment alone. They are for the common good (v.7).

What a brilliant idea God had by inventing the church!

Now here are a few things that follow from this chapter when reflecting on our place in the church.

1. The church is the main instrument for embodying and advancing his kingdom, and so students should be active in a local church, and be an active limb in that body. One of the main ways that they can serve the advancing of the Kingdom, in and through the local church, is by serving the gospel where the Lord has placed them – in the university context. The best people to reach students are students, not church members who are not part of the university and are generally older. The main sphere of ministry for students, therefore,

should be to fellow students. Seeking to win people to Christ and to build them up for a lifetime of service to him.

Such ministry is in and through the local church because students are part of a local community where they are taught from the scriptures, and accountable to their church leaders.

Some perceive there to be a conflict between CU and church, but there is no conflict. CU isn't a local church but a missionary outpost of the local churches in a hostile culture. However it is an arm of the local churches because students are (or should be!) members of local churches where they are taught and pastored. Local churches should get behind and support the united and effective witness of student-led CUs that are having such a significant impact on our campuses today.

2. It is all too easy to divide passionately on all sorts of secondary issues. The gift of tongues has been a disastrous example of this. Ask God what spiritual gifts he wants to give you. Accept them thankfully and use them faithfully, and do not either be proud (v.21) or jealous (v.15). Keep the main thing the main thing. Do not allow secondary issues to divide you. 'Reform' cannot say to the charismatics, 'I have no need of you' (v.21) and vice versa. *'The body is a unit of many parts and though all its parts are many, they form one body'* (v.12). Determine both to value diversity and to contend for unity in your part of Christ's body. We have got to stand together if the variety-in-unity which is God's plan for the church is to be seen.

Revd Canon Dr Michael Green is Senior Research Fellow, Wycliffe Hall, Oxford & Canon Missioner, Holy Trinity Church, Raleigh, North Carolina.

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Peter the Engineer?

David Kay

This article is along lines similar to that in the last issue entitled: “Isaiah”. The underlying context is engineers’ personalities, capabilities and views about themselves and others.

Peter is undoubtedly the best known of the twelve disciples. What do we first think of when this disciple is mentioned? A fisherman? An impulsive personality? The founder of the church? Peter’s field of work as a fisherman must have included producing and mending boats and nets. No-one would have called him an engineer, but did he have the potential to be one? Several incidents in the gospel accounts stand out where Peter made a significant impact. Four of these incidents are dealt with below.

Table showing chapter numbers for four incidents involving Peter

Incident	Matthew	Mark	Luke	John
Walking on water ¹	Ch 14	Ch 6		Ch 6
Identity of Jesus	Ch 16	Ch 8	Ch 9	
Transfiguration	Ch 17	Ch 9	Ch 9	
Knowledge of Jesus denied ²	Ch 26	Ch 14	Ch 22	Ch 18

¹ only Matthew includes Peter’s actions.

² Peter’s reinstatement is described in Chapter 21 of John’s gospel.

Walking on water

When Peter saw Jesus walking on the lake, he was captivated by the idea of doing the same thing. Maybe he carried out a brief buoyancy assessment, and got the wrong answer. More likely is the impulsive desire simply to copy Jesus, but in something that might give him a sense of achievement or generate some excitement. On this occasion the activity was physical, rather than spiritual.

The purpose of Jesus' action in walking on the water is not obvious, unlike many miracles where a clear need was apparent. So Peter would not have had any insight at the time. As far as doing what Jesus did was concerned, Mt.10.vv.1-10, Mk.6.vv.7-13 and Lk.9.vv.1-6 describe how Jesus instructed the disciples to follow His pattern of a healing and deliverance ministry. Christians are called to follow a similar pattern now, but have the benefit of greater understanding.

Identity of Jesus

Jesus raised with his disciples the question of His identity, when He asked them: "Who do people say I am?" It was Peter who responded. Jesus commended Peter for his recognition that Jesus was the Son of God, and went on to declare that He would build His church on "this rock". Since the name *Peter* means "rock", the spotlight was being turned on to Peter, and the inference was that Peter would be the founder or head of the church. Many Christians view Peter in this way, but not all. Any reader with internet access who is interested in exploring an alternative interpretation should visit the website www.geocities.com/trvalentine/orthodox/rock.html. Whatever the truth is, engineers are often called to be leaders.

Transfiguration

Peter, not knowing how to respond to the transfiguration, blurted out the idea of building a shelter for Moses, Elijah and Jesus. It is interesting to note that there is no recorded response to Peter's comments from anyone else in the gospel accounts. Peter's response reflected his impulsive personality, and also his interest in structures and perhaps design activities. Nevertheless, his timescale for any such work seems unrealistic. In addition, the impulsive characteristic is probably not a useful one for an engineer!

Knowledge of Jesus denied

As the events of the passion were unfolding, Jesus told His disciples that they would desert Him. Peter, the first disciple to assert himself, denied that he would do so, and in this case, unlike the other three incidents described above, the other disciples made the same assertion for themselves. The well known crowing of the cock is central to the episode, which needs no elaboration here. It was Peter who had to go through the subsequent trauma of verbal denial of

a knowledge of, and friendship with, Jesus. Engineers sometimes have to face failure in their work and careers, and can be tempted to make assertions that later have to be withdrawn.

A question of the questions

In Mt. 19. v.25 and v.27 we find an interesting question: “What about us?” The background is the interaction between Jesus and the rich young man, and the resulting feelings of the disciples. A particular issue is the sacrifice that they have made in following Jesus, and the feeling that perhaps it has all been for nothing. It was Peter who raised the matter. Peter wanted to analyse things and make comparisons. Some people today, probably many engineers, like to do the same. Other people just take what comes along in life.

An incident leading to a similar “What about?” question is reported at the end of John’s gospel, where Jesus gives three times the command “Feed my sheep” (not exactly a precise repetition). The primary focus in this passage is usually the reinstatement of Peter by Jesus, following the denial discussed earlier. A secondary aspect is the destiny of the disciple whom Jesus loved (John). In this case Peter’s question is: “What about him?” Once again Peter’s analytical mind comes into operation.

In contrast to other incidents, at the meal described in John 13, Peter wants to know who will betray Jesus, but declines to ask Him directly (see v.24). Instead he leaves the question for John to ask. So Peter is not always the first to speak out.

There are many different ways of studying scripture. A wider study of the questions asked by biblical characters is worth pursuing, as much can be learned by following their questions through.

The request to have a special place

It is interesting to note that Peter was not involved in the request that James and John should have a special place in the kingdom (see Mt. 20. vv.20-28 and Mk. 10. vv.35-45). So Peter did not feature as the first to be involved in absolutely everything.

After the resurrection

The leadership demonstrated by Peter earlier in his life continued after the resurrection of Jesus. Peter's attitude to the Gentiles had to be refined (see Acts 10), and his response indicates that he was capable of having a flexible approach. This quality is essential for engineers!

Conclusion

Some qualities and attributes of Peter suggest a leaning towards engineering. Maybe the journey through Peter's life searching for an engineering instinct has not proved entirely conclusive. Whatever the verdict, the question of whether Peter would have made a Chief Engineer is not really so important. What is important is that engineers of today, reflecting on Peter's conduct, should be encouraged by his life, and have confidence in their calling, and usefulness in helping to build the kingdom.

Peter asked the questions: "What about him?" and "What about us?" Engineers are liable to question everything! Additional questions we may ask are: "What about climate change?" "What about poverty?" "What about evangelism?" and, finally, "What about CEA?"

Transform Work UK

Dedication and Celebration 5th February 2008

Tony Fletcher

Transform Work UK was formed in 2007 by the merger of two existing groups aimed at encouraging workplace Christian Fellowships. This event was the formal launch and dedication. The Transform Work UK website www.transformworkuk.org has notes and recordings of the event – so please refer to for a more comprehensive (and correct!) appreciation of these events,

Introduction

I attended the launch and dedication of *Transform work UK* (TW UK) at the Institute of Directors, Pall Mall, London representing the CEA committee. These notes give my inadequate summary of the event. There were actually two events, the first starting at 12:30 with tea and chat followed by the ‘formal’ proceedings starting at 13:00, which was followed by an opportunity for networking between those present. I was one of several people stayed on throughout the afternoon for the evening event. The evening event began at 16:30 for tea with the formal proceedings starting at 17:00 and finishing at about 18:15. Each event followed a similar pattern with short talks of about five minutes and it was thus kept snappy and interesting. It seemed to me that all the right things were said. I took the opportunity of talking with Ros Turner (*Network Adviser, Transform Work UK*) and also Jayne Payne who deals with their administration and finance.

In one sense this was the launch of a new organisation, but it was actually formed at the end of 2007 by the coming together of two predecessors (the Christian Workplace Forum and Getting God to Work.). Its aim is to promote and support both work place Christian Fellowships and also Professional Groups, such as ours (CEA), and hence to influence the nation with the gospel. Christians at Work remains our ‘parent’ organisation, but we have also formed a relationship with TW UK. Those who spoke at these events clearly had the gospel at heart and wanted to see Jesus proclaimed and overruling in all we do in the workplace.

Chan Abraham acted as master of ceremonies and spoke first at each event. He leads the Board of TW UK and is also CEO of Luminus (a company that provides affordable accommodation see, www.luminus.org.uk). Chan Abraham said that TW UK were passionate about transforming the workplace for Jesus and want to see the church penetrate the workplace. He welcomed those present and introduced each speaker in turn. He made the point that we are all in full-time Christian ministry!

Richard Meryon (Christian Vision for Men and TW UK Board Member). The aim of Christian vision for men (www.cvmen.org.uk) is to introduce every man in the UK to Jesus. Richard was in the Royal Navy and during that time was deployed for seven months at a time during which he had no escape from his workplace! Many Christians leave their Christianity in the closet when they go to work. We aim to help the Church teach and resource individuals to have a godly influence at work, to network professional fellowships, to pick up graduates when they leave university and connect to the relevant sector group, to have a young people's transition programme and an Internet portal to point people to all these resources. We want to be able to influence the nation with the gospel. The aim of TW UK is to be a signpost for other groups and to support workplace Christian groups.

Martin Aylett spoke about the BT Christian network (www.ciconline.org.uk/cicbctn.htm). God is at work in BT! BT CN has been going for about two years, set up as part of the company's diversity network. This brings some disadvantages as the company sees the BT CN as just one of many such networks, but does lend legitimacy and an ability to use BT's internal communications systems to let people know there are Christians in the company. Christians can feel isolated, only one in a building. If that person becomes a member of BT CN, then the BT CN leaders can tell them of other members in their building or area which can enable them to form a workplace Fellowship.

John Casey spoke about the Christian Fellowship in the Audit Commission which has three objectives – share fellowship – share faith – support employer in its service to the public. It started Small. Circulated *thought for the day* every week through e-mail. The Audit Commission is distributed across the country. Christians need to find each other. As the Christian groups grew larger and more visible, this led to engagement with senior management. To their surprise they were asked to advise and help on forming policy on

diversity and other staff issues. Like Daniel, they needed to bring heaven's wisdom to everyday life and engage with senior managers on what to pray for over the next few months.

Prayer and Dedication

At the first event *Bridget Adams* (a workplace Chaplain) said a prayer of dedication. For the evening event *Jonathon Oloyede*, of Glory House, and Global Day of Prayer said the prayer and blessing.

Caroline Spelman

The Lunch time session was addressed by: *Caroline Spelman (MP for Hull and chairman of the Conservative Party)* www.carolinespelman.com, who was a business woman prior to becoming an MP. The public standing of MPs is low at present. She reckoned that 20 per cent of MPs declare themselves as Christian, which, if true, would be above that for the general UK population. She talked about building a fellowship. When she joined Parliament she was invited to join an existing Christian group. They needed to build a fellowship of trust. In their case particularly, it is important that what is shared in the fellowship goes no further. People will notice that you belong to a Christian Fellowship and ask about it! Keep open and avoid accusations of elitism. This Parliamentary Christian group does have closed fellowship meetings but alternates those with open meetings. She said that those who are not Christians watch those of us who are and are looking for consistency of behaviour. She ended by quoting from Micah.

Mark Green

The Tea time session was addressed by: *Mark Green (London Institute of Contemporary Christianity)* www.licc.org.uk. Transforming work is an ambitious title! We need to model. We need to minister. We need to be mouthpieces. We need to be movers and shakers – change culture. Current statistics suggest that the UK is one of the worst places to work in Europe! On average we work 4 hours longer than others in the EU. 15% of people are working unsocial hours. We only rank 120th in the world at protecting people when they are hired or fired. We are in the grip of selfish capitalism. 23.5% of people report emotional stress, influenced by; Structure, Working practice, Personal values, Behaviours, Ethos. We need to go beyond this and change

‘Ethos’ into ‘Christos’. We can do things like provide coffee/biscuits/ cakes to help form relationships at work.

What is discipleship? What is God interested in? God made man on the 6th day because everything else was ready by then – except relationship – which he needed to realise. A Gallup poll suggests that people are happy when: they know what is expected of them, they are able to do what they do best, and feel managers care for them. All this lines up with Christian values. Being able to trust the boss is a key factor. Mark said that the number one cause of stress is anger and lack of forgiveness. Does the Gospel have something to say about this? The most long-term profitable companies are not focused on profit, but they are focused on purpose. Using God’s principles provides a better way but we have also got to be in line with the core of the Gospel. In some cases following the gospel ethos may mean not making as much profit. For instance, a seller phoned Mark to consult him about whether to sell Harry Potter toys. Mark provided some pointers without giving direct advice. The seller himself decided that the Holy Spirit was telling him not to sell these toys and so he did not, and the result was £400,000 off his bottom line a year.

In Conversation

Sally Davies, who had been in PR, said that people will use search engines to find information about Christian engineers and therefore advised that we should not have our full title as the URL, but should get a short URL. She said it is also important to keep the site updated – weekly if possible – so that people will return. She suggested sharing the update load between two to three people who take it in turns. Put on current issues to pray for. She is looking for people to go into schools to talk about their career. We might want to encourage our members to contact her to take part in her project.

Ros Turner (TW UK) and I talked about the need to vastly expand the CEA membership if the group was going to flourish and have a useful purpose in God’s scheme of things.

Moving Forward

Transform Work folk attended Spring Harvest at Skegness this year (2008) to promote the various work-place and professional fellowships they are seeking to support. CEA was one of these and they gave out just under fifty CEA

membership leaflets. If you took one please do let us know what you thought of the TW UK effort and the CEA leaflet – and a big welcome if you became a member. We hope you will share some of your experiences as a Christian and an engineer through the pages of this *Perspectives* journal.

I returned home feeling encouraged by the events and with a renewed willingness to be used by God to help CEA move forward. As Nick Stroud was to remind us at the CEA Committee meeting a few months later, this must not be in our *power* but as God directs and enables with His Power.

An introduction to:-

The Faraday Institute for Science and Religion

Denis Alexander

The Faraday Institute, based at St. Edmund's College, Cambridge, aims to bring academic rigour to science and faith interactions (www.faraday-institute.org). Too often the debate has been hijacked by extremists who polarise the debate for particular ideological reasons. The Faraday Institute aims to move beyond that kind of unhelpful polarisation in order to carry out a research and education programme that will inform people about the issues involved. The Institute has a Christian ethos, but does not engage in advocacy for particular positions.

In many ways the roots of the Faraday Institute are in Christians in Science (CiS). For years regular CiS lectures were held in Cambridge. Then a group of CiS members collaborated to obtain a small grant from the Templeton Foundation which, over the period 2001-5, funded a more ambitious lecture programme, in which speakers were brought in from many different parts of the world, and lectures were followed by dinner-discussions that were edited and then posted on a web-site. The success of this series provided the launching pad for a more ambitious grant submission to the Templeton Foundation, and it was with this grant that the Faraday Institute was launched in January, 2006. The Director is Denis Alexander, and the Associate Director is Bob White FRS, who also served for many years on the CiS National Committee. Both are Fellows at St. Edmund's College, which explains the location of the Institute. Denis Alexander is currently winding down his research lab at The Babraham Institute in order to focus full-time on the work of the Institute, whereas Bob White retains his Chair in Geophysics at Cambridge University. The Course Director is Rodney Holder who serves on the national CiS Committee. The previous CiS Development Officer, Ruth Bancewicz, is also a Faraday Staff member, and is developing some great new materials on science and faith for churches.

The Institute currently has 12 staff members, of whom two are involved in administration and the remainder in research projects of various kinds. It is a reflection of the multidisciplinary nature of the Institute that these projects include research on natural theology, the history of science, evolutionary biology and determinism, and the relation between Biblical theology and environmental issues. Wherever possible research staff are located within university departments to facilitate interactions with other researchers in the field. The Institute also has around 30 Faraday Associates, mainly scientists, located in various academic settings, mainly though not entirely in Europe. The Associates, many of whom are CiS members, provide valuable linkage between the Institute and other research centres.

As part of its research programme, the Institute hosts writers' workshops. The first of these was held in September, 2007, and was attended by 14 writers, mainly historians, addressing the various ways in which biology has been used and abused for non-biological goals from 1600 to the present day. The ensuing book (working title: 'Ideology and Biology: from Descartes to Dawkins') will be published in 2009 to coincide with the Darwin anniversaries. The writers' workshop this year will be on the environment.

The Institute has an active programme in the public understanding of science and faith, organising Courses open to any graduate or undergraduate, of any faith or none, with lecturers on the Courses mostly committed Christians. Last year 231 delegates from 31 different countries attended Courses, and 47 different speakers lectured. The talks are filmed and posted on the Faraday web-site in both video and MP3 formats, along with our other lectures and seminars, generating so far more than 210 items in all, one of the major international resources on science and religion freely available on-line (www.faraday-institute.org – see the Multimedia Folder). Termly Public Lectures, held in Cambridge, also become available world-wide through the web. This past term's lecturer was Prof. John Wyatt from University College Hospital, London, active in the Christian Medical Fellowship, who spoke on 'What is a Person? Matters of Life and Death'. Other recent Public Lecturers have included Bishop Tom Wright who spoke to more than 500 on 'Can a Scientist Believe the Resurrection?', and Dr. William Hurlbut, Adviser on Bioethics to the US President, who debated with Sir Brian Heap FRS the topic 'Stem Cells – Playing God Again?'

Another initiative in the public understanding of science and faith is the publication of Faraday Papers, written by experts for the non-specialist, only four pages long so that they can easily be read on a train journey or wherever else you manage to get some reading done. The Papers are freely available from the Faraday web-site (www.faraday-institute.org), or can be ordered on-line very cheaply in print versions. Translations of the Papers are also being posted at the same site, so far including Chinese, German and Serbian, all in the same format, and all available for free down-load.

Faraday Staff, in particular Denis Alexander (biology, evolution, dra24@hermes.cam.ac.uk), Bob White FRS (geology, environment, rsw1@cam.ac.uk) and the Rodney Holder (cosmology, natural theology, rdh39@cam.ac.uk), also speak frequently on science and faith issues in CiS local groups, churches, schools and conferences. Recently Denis Alexander spoke to 600 people on ‘Does Science Make Religion Redundant?’ at St. Andrew’s University as part of the new James Gregory Lecture Series on science and religion (see www.jamesgregory.org).

The Faraday Institute much appreciate the many ways in which we can partner with CiS to make a joint impact in promoting an informed understanding of the relationship between science and faith.

Dr Denis Alexander is Director of the Faraday Institute for Science and Religion (www.faraday-institute.org) and is on the national committee of Christians in Science (www.cis.org.uk).

Centre for Bioethics and Public Policy

A report

Mike Cowan

The BioCentre has been arranging symposia on aspects of the above and I have attended three of them. The first two, Robot Ethics and Privacy and Surveillance looked at expanding technologies. The third looked at The Role of the Arts in Democratic Policy Making. The following gives my personal reflections on these meetings.

Robots and other artificial agents, Tools or embryonic persons?

Professor Steve Torrance *Middlesex University* pointed out that robots and entities having artificial intelligence (AI) “will be making decisions and occupying roles which would certainly have deep moral input if humans were taking such decisions and roles.”

Nick Bostrom, *Director, Future of Humanity Institute at Oxford University* spoke of the need for Transparency, Auditability and Predictability of domain specific AI Algorithms. He added to this, “A tendency to *not* make innocent victims scream with helpless frustration”. I empathised here – how often are we frustrated by the unintended consequence of the narrow boundaries built into an algorithm and the lack of any human to appeal to?

Professor Kerstin Dautenhan *University of Hertfordshire* introduced some of the work she is doing related to the psychological impact of robots on people. When presented as a ‘cuddly toy’ they can be helpful to emotionally challenged children. When they appear human-like they are unsettling. The symposium went on to consider whether robots had moral rights as well as moral responsibilities. Could they be sentient, (that is, able to feel pain and pleasure)?

My reflections include:

- 1 How could military robots be made subject to all aspects of the Geneva Convention?
- 2 If humans are made in the image of God would it be unexpected if humans proved able to manufacture sentient robots that are, to a degree, autonomous beings?
- 3 If Love is a vector quantity, could this be programmed into a robot?

Privacy and Surveillance: Monitoring humans and monitoring human rights

Professor Brownsword *from the School of Law, King's College, London* clarified the issues for me. The headings below are his and the comments are mine.

Privacy. I accept that the 'man in the street' may know my identity, but I do not want even long term colleagues at work to know full details of my life without my agreement and knowledge.

Fair Processing. If an entity – be it a private individual or an organisation – is in a position to process multiple details about me, the result should be correct and balanced. The quantity of information gathered should not breach my right to privacy.

Confidentiality. There is information about me that is confidential and I would wish those who have it to hold it in confidence.

Nigel Gilbert, *Professor of Sociology, University of Surrey* summarised the technologies available and advised:

- 1 To the individual – do not give up privacy unintentionally.
- 2 To business – the need is for authorisation, not identification.
- 3 To government – do not sacrifice trust for surveillance.

We noted that some individuals refuse to use a loyalty card that allows our shopping habits to be analysed, but I wonder whether a retailer can achieve this merely by noting our credit and debit card details. My ISP can monitor

my Internet usage and my mobile telephone company can monitor my location.

Simon Holloway *Bloor Research* described some of the applications of Radio Frequency identification (RFID). Thus, at an oil refinery, each worker enters an 'entry lock' before being given access. In the lock the following checks are made:

- 1 The identity of the individual and his/her current competence status.
- 2 The presence and identity of all the necessary safety equipment.
- 3 The maintenance status of that equipment.

RFID is often of limited range, but where active chips are used long range surveillance and monitoring of position is possible.

Just before attending this symposium I learned of a large construction company employing a clocking-in system that requires workers to have their fingerprints read electronically to confirm their identity. This prevents foreign nationals with work permits from handing over their jobs to fellow nationals without a work permit and the required qualifications.

Summing up

The focus of my reflections on these two symposia has been the need for human and humane oversight of these technologies, not least in situations where employers want to use the technology to reduce staffing levels and de-skill those jobs that remain.

- Without oversight, fraud will be practised – my eye details could be modelled and presented to a scanner that could then allow a withdrawal from my bank account.
- Without oversight I could be refused credit or some other service because I fail to fit the algorithm and there may be no person authorised to appeal to.
- Without oversight a robot may cause mayhem where there is nobody qualified to control it.

The focus of the BioCentre symposia was the need for good regulation of technologies without losing the advantage offered by using them.

Arts and Technology

The role of the Arts in Democratic Policy making

On 14th October I attended a very different symposium that attracted a different, (and younger) group of attendees. I learned that where I will argue a case from cold logic, the artist reaches our intuition and feelings.

Presentations included:

- A talk by Justina Robson who uses the Science Fiction she writes to explore various issues.
- A display explaining research work being done by 'Material Beliefs'. This is part of the Department of Design at Goldsmiths, University of London. It sets up exploratory prototypes intended to push the boundaries between 'silicon and cells'.

Conclusion

Reports and details of these and future symposia can be found on the Bioethics website: www.bioethics.ac.uk

Advice to a Young Engineer

Tony Fletcher

Editorial note: Tony Fletcher has been in e-mail correspondence with a young man who is considering whether an engineering training can lead to a useful opening in mission. Here we publish a summary of that correspondence. Names and details have been omitted, and the correspondent has been given the name John.

To: admin@christianengineers.org.uk

Subject: Inquiry with Regards to an Open University course

To whom it may concern,

I was wondering if you could help me. I am 23, have been living in the UK for five years and have started a BEng at The Open University. I am doing the initial course. Throughout the course I have had to examine my skills and abilities, my life experiences and where I've come from. I have also had to think about my future, my place in engineering.

I am a born again Christian and have been since I was eight. I completed my studies in South Africa, then moved to England and I did 18 months of AS and A2 levels, gaining qualifications in Maths, Further Maths, Art and Physics. Because of my residence status as an international student, I cannot afford to go to University. I did a Christian year out, a year of discipleship, training, and service. During this year I did apply to Cambridge University to start studying Mechanical Engineering the following September. I was given an unconditional offer, which I had to turn down due to financial difficulties because of my residence status. Since the end of that year I have busied myself with various part time jobs and smaller short courses in Mathematics at the OU and am now a children's worker for a local church.

I would like to gain a qualification in Engineering so as to use that to serve developing communities around the world in the context of social justice and mission. My request from you is for any information or contacts of people

who have done a similar thing to me, using their skills in the context of mission, who can identify appropriate engineering disciplines, and who I can

ask, “how did you do it?” If there is anyway you can help please let me know.

John

Dear John,

Thank you for getting in contact. I am sorry to hear of your problems with gaining residency. If you could manage to become a resident it would make getting qualifications financially easier as you say. If you still have residency in South Africa, would it be practical for you to study there?

To try to answer your question. I do have a friend who lives nearby who worked as an Engineer for the United Mission to Nepal (UMN) about 20 years ago. He spent the first five years, supervising the installation of a small head hydro electric scheme. He spent the next five years overseeing the engineering work of UMN throughout Nepal and spending a lot of time negotiating with the Government on what could and could not be done. So I am sure you would find plenty of scope for serving the Lord as an Electrical Engineer.

Actually I am sure that you will find scope for serving the Lord in any branch of engineering! Teaching IT must be another one!

Another much needed skill is Civil / Water engineering. Many places in Africa and Asia are without a reliable supply of drinking water easily accessible in that locality.

The Missionary Aviation Fellowship needs aircraft mechanics who also have a pilot's licence and can fly. FEBA radio, and several other Christian radio and TV stations require radio, TV and sound / recording engineers.

There is an organisation called *Christian Engineers in Development*. They have a web site at <http://www.ced.org.uk> that you might find useful. You could contact their secretary

Mrs. Barbara Brighthouse
146 Sheerstock, Haddenham, Aylesbury
Buckinghamshire, HP17 8EX
e-mail: admin@ced.org.uk

In conclusion, my personal opinion is that though there may well be cases when the Lord asks us to serve Him in ways that we do not seem to be naturally equipped for, I think this is relatively rare. Much more usually the Lord takes the talents He has given us and asks us to use those in His service. Therefore my recommendation would be to really think about what type of engineering you enjoy most. What are you good at? What do you like doing and feel you are best at? Study that branch of engineering at University and pray to Lord about how to use the skills acquired in His service.

Best Regards Tony
A M Fletcher

Dear Tony

I seriously appreciate your response! It was in short fantastic. It has helped me personally aside from my course but also gives a very insightful reference for what I will report on and you were very helpful in mentioning some specific fields and examples. So that is brilliant! Thank you so much! Coincidentally I have already sent a similar e-mail to CED and await a response from them.

If I have further questions as I carry on, please may I to contact you again?

In Christ

John

Dear John,

I am glad you found my reply helpful. For completeness I should also mention that many mission organisations welcome people with specific skills including skills in engineering and experience in teaching engineering as well as practicing it. As you are probably aware there are many countries that do not accept Missionaries as such but are happy to accept people with specific skills that they need who also happen to be Christians. Sometimes this is the only way of supporting the Church in a Country.

Yes you certainly may contact me and/or CEA again if you would like to in the future. We are open to ideas for other ways we can serve the Lord by helping and encouraging those considering, entering or in the Engineering profession – your ideas will be welcome!

I pray that the Lord will lead you and enable you to serve Him. Happy studying!

Best Regards

Tony

Committee Meeting Reports

Mike Cowan

The Committee met twice this year, on 24th May and 25th October.

Membership

John Baden Fuller announced his decision to resign from his positions both as Chairman of the Committee and Editor of the Journal. We were pleased that John accepted the invitation of the other members to remain on the committee with the title of President. The post of Chairman remains vacant and the Committee agreed that the search for a new Chairman need not be limited to current members of the CEA.

The good news is that there are now six members of the committee. Nick Stroud continues as Treasurer and Vice-Chairman.

Chris Rasiah and David Kay have resigned owing to specific family commitments. There are four newer members:

- Paul Darley has taken responsibility for development of the new website. His son is proving to be a valuable and competent resource.
- Tony Fletcher is Secretary.
- Mike Cowan has agreed to be editor of the Journal, albeit he will seek help with arranging layout and format.
- David Burgess attended his first meeting in October. David was recently working with a charity in India and will take an interest in Mission topics.

General

The current membership of CEA is just over 80 persons. Comment was made that while CEA could not fulfil all its objectives at this size it was necessary to focus on what can be done. A 'culture' shift was needed, together with recognition of the limited time and attention that our members and potential members have available.

The following points were included in our discussions:

- An improved and independent website is under development. See www.christianengineers.co.uk.
- A simpler form of application for membership is being developed.
- Tony is updating a 10 year-old introductory leaflet.
- Tony reports in this Journal that he arranged for Transform Work UK to give out CEA Leaflets at Spring Harvest this year. We intend to continue and possibly further develop our links with this organisation. Tony has written a 'Thought for the Week' for their website – see www.transformworkuk.org.
- The value of electronic communications.

Conclusions

Your comments and ideas are welcome. Please pass them to a committee member. Their e-mail addresses can be found on the inside front cover.

We offer our thanks to John Baden Fuller for his previous and continuing support and hospitality.

The next committee meeting will take place at Gilmorton on Saturday 21st March.