



Science and Faith

"... through Him and for Him" (Colossians 1:16)

No. 28

December 2012

Available online at www.mikelanderson.com

Contents

Consider the creatures

Bee Wise

Mike L Anderson

"You have to move home. You only have a few days to do it. There are a dozen places to choose from and you have six criteria to consider. Oh, and your ten thousand kids all have to agree. Good luck. Honey bees have to solve this kind of complex problem routinely. "

News briefs (From the Internet)

- * Major study confirms that global warming is accelerating
- * The Intergovernmental Panel on Climate Change has underplaying the rate of climate change
- * Efficiency of organic solar cells nearly tripled
- * Mercury has ice and organic material
- * An effective pain-killer that costs nothing
- * Death of big old trees a global epidemic
- * Anglers are driving fish evolution
- * Even low exposure to pesticides reduces brain function
- * You are not your own man

Humour from the Internet

Funny church signs ...

Wise as serpents and harmless as doves

Getting high on heaven: the argument from near-death experience

Mike L Anderson

Feature article

Faith and Superstition

George Romanes

“Whether or not Christianity is true, there is a great distinction between these two things. For while the main ingredient of Christian faith is the moral element, this has no part in superstition. In point of fact, the only point of resemblance is that both present the mental state called *belief*. It is on this account they are so often confounded by anti-Christians, and even by non-Christians; the much more important point of difference is not noted, viz. that belief in the one case is purely intellectual, while in the other it is chiefly moral. *Qua* purely intellectual, belief may indicate nothing but sheer credulity in absence of evidence; but where a moral basis is added, the case is clearly different; for even if it appears to be sheer credulity to an outsider, that may be because he does not take into account the additional evidence supplied by the moral facts.”

George John Romanes FRS (20 May 1848 – 23 May 1894) was an Christian evolutionary biologist who gave up and then returned to his faith. This excerpt is taken from *Thoughts on Religion* Paternoster Row, London.

Consider the creatures

Bee wise

Mike L Anderson

You have to move home. You only have a few days to do it. There are a dozen places to choose from and you have six criteria to consider. Oh, and your ten thousand kids all have to agree. Good luck.

Honey bees have to solve this kind of complex problem routinely. If they don't get it right the colony may well perish. We need them to get it right because they are God's instruments in providing us with almost a third of our food crops through pollination. How do bees do this without even a second



thought? And without a first thought either. Individual bees are pretty stupid.

The answer is such a wonder that you may well have great difficulty believing me. However, researchers have very thoroughly and laboriously investigated the matter. So, what I tell you is sober fact. Tom Seeley, the renowned bee expert, puts it in a nutshell, "bees in a honeybee swarm ... achieve their collective wisdom by organizing themselves in such a way that even though each individual has limited information and limited intelligence, the group as a whole makes first-rate collective decisions."¹ Bees and other social insects have been honed by many millions of years of evolution to solve problems that are vastly bigger themselves and, as we shall see, they do it in a quite remarkable way.

Like bees, we humans have problems that are much bigger than us individually. Miller puts it this way. "As everyday life grows more complicated, we increasingly find ourselves facing the same problems of uncertainty, complexity, and change, drowning in too much information, bombarded with too much instant feedback, facing too many interconnected decisions. Whether we realize it or not, we too are caught up in worlds of collective phenomena that make it more difficult than ever to guide our companies, communities, and families with confidence. These challenges are already upon us, so we need to be prepared."²

Perhaps we can learn something from social insects? Actually, we already have. Social insects have come under intense scrutiny recently and are giving up their secrets. People are using these secrets to deal very successfully with complex and previously intractable problems in such disparate fields as telecommunications, computer network security and airline production. Miller even suggests that the best way to solve big complex problems is to "turn to the experts - not the ones on cable TV but those in the grass, in the air, in the lakes, and in the woods." So, how do bees do it and how can humans apply the principles? Here is a simplified picture of how it works:

Bee wisdom

Hundreds of nest-site scouts (about five percent of the colony) independently search for sites and when they find a promising one, they return to let the other scouts know. They consider nest-site size, location, how sheltered it is and so on. The first step in bee wisdom is to get knowledge from many independent experts. Finding the best nest-site is just too big a problem for a cognitively limited scout to solve individually. The principle is echoed in Proverbs, "For lack of guidance a nation falls, but many advisers make victory sure."³ The scout uses a "waggle dance" to tell the hive where the nest site is. (Bees use the same method to report food sources). The angle of the waggle run to the vertical indicates the direction of the nest-site relative to the path of the sun; the duration of the waggle run indicates the distance and the number of dances how great they thought the site was.

Some scouts will check out sites reported by others. If they concur they will also do a waggle-dance for the site. However, and this is critical, Seeley reports that no “scout bee, not even one that has encountered a wildly exuberant dancer, will blindly follow another scout’s opinion by dancing for a site she has not inspected.” There are no false scouts in bee communities and scouts are always sceptical of other scout reports. So, there is no chance that the colony will follow a rumour mill. The second step is to let ideas compete with each other based on how well they match up with the evidence. Eventually, one site will get danced for more often than other sites and will edge out the competition. That site will become the location for the new hive.

Worker bees have an important role – do nothing. That is they do nothing *scout* related. Instead, they stick to keeping the current hive and home together. This frees the scouts to specialise on their job. Seeley does not draw attention to this point, but while scouts never blindly follow scouts, worker bees *do*. However, worker trust is always based on a specific *quorum* of *scout* opinion never on the majority *consensus* of *worker* opinion.⁴ Workers accept the judgement of the scouts and follow them to the new nest site. It is too costly and impractical for each and every member of the colony to investigate all possible sites. So, bees have developed a division of labour. Investigating potential hive sites is not done by just any worker. It is left to scouts based on their age, experience and genes. The final step is to admit that there are problems that are too big for just anyone to solve. The vast array of world issues and information on these issues makes it impractical for everyone to investigate everything no matter how clever humans are. Notice that the colony as a whole neither champions mere scepticism nor mere trust, neither only independence nor only dependence. As Seeley says, “what I find most noteworthy about a swarm’s skill in decision making is how it arises from a truly ingenious balance between interdependence and independence...” The final step in bee wisdom is humility.⁵ And Seeley, this bee scout, has been applying bee decision-making principles in faculty meetings at his university.⁶ It takes some humility for a professor to let an invertebrate be his mentor! Scripture, of course, links humility and wisdom: “When pride comes, then comes disgrace, but with humility comes wisdom.”⁷

Swarm madness

But bees can be duped. They can be made to believe that a human being is their queen. Just coat the person with queen-substance, and the bees will swarm all over him trying to attend to his needs!⁸

Humans, too, can slip into swarm madness. My mother, who had a mischievous streak, showed us how this could be done. We would be walking along a busy street and she would suddenly stop and point to an arbitrary point at the top of a building. Then she would get us to gaze in that direction. Pretty soon others would stop and stare. When a sizeable crowd had developed we would slowly back away and marvel. James Thurber

recounts in his autobiography how he and virtually everyone from the East side of Columbus, Ohio fled from a non-existent tidal wave! The trigger? Just one person running.

Considering the prospects for the planet, climate change is one area where humans need to be in touch with reality. And considering the vastness and complexity of the global climate, this is one area where individual humans are cognitively limited. How is the human swarm managing? We do have our scouts. Many thousands of climate scientists have gathered a huge amount of data on climate change. The vast majority agree that global warming is happening and is mainly human caused. Furthermore, those that are unconvinced have substantially less expertise than the convinced.⁹

Remember that in democratic human societies it is the non-scouts, the politicians via the voting public that make policy decisions. In this situation it is vital that the workers listen to the scouts. It would be a marvel in its madness if humans paid more attention to unqualified workers than to scouts. Yet this is exactly what is happening. Take the USA's most widely circulated newspaper, *The Wall Street Journal*. In the last four years it has mentioned one particular non-scientist *more often* in the context of global warming than the Intergovernmental Panel on Climate Change (IPCC).¹⁰ The individual, described as the world's leading global warming sceptic, is Lord Christopher Monckton. However, his credentials are in journalism and classics and he has not even published one peer-reviewed scientific paper, let alone in climate science. The IPCC is a body of thousands of scientists comprehensively assessing the risk of climate change.¹¹

Imagine that bee scouts were required to give equal time in waggle-dancing for each prospective nest-site as a matter of balanced reporting. A thorough investigation has revealed that this is the situation with the major newspapers in the USA with respect to climate science.¹²

Another way to gauge who the public are listening to is to use Google and Google Scholar (see table below). In regard to global warming, Lord Monckton has six times the presence on the World Wide Web of John Houghton. Monckton also has one hundred times the presence on YouTube as Houghton in the same context.¹³ John Houghton is professor of atmospheric physics at Oxford University and co-chair of the Intergovernmental Panel on Climate Change's (IPCC) scientific assessment working group.¹⁴ Scholars on the other hand are ten times more interested in what John Houghton has to say in connection with global warming than Lord Monckton! In human society the scouts are listening to a climate scout; the workers, however, are largely listening to another worker who has done no scouting in his life! A similar picture emerges if you compare Rush Limbaugh the radio talk show host, and James Hansen, professor in the Department of Earth and Environmental Science at Columbia University and head of NASA Goddard Institute for Space Studies.

Table: Hits on Google and Google Scholar

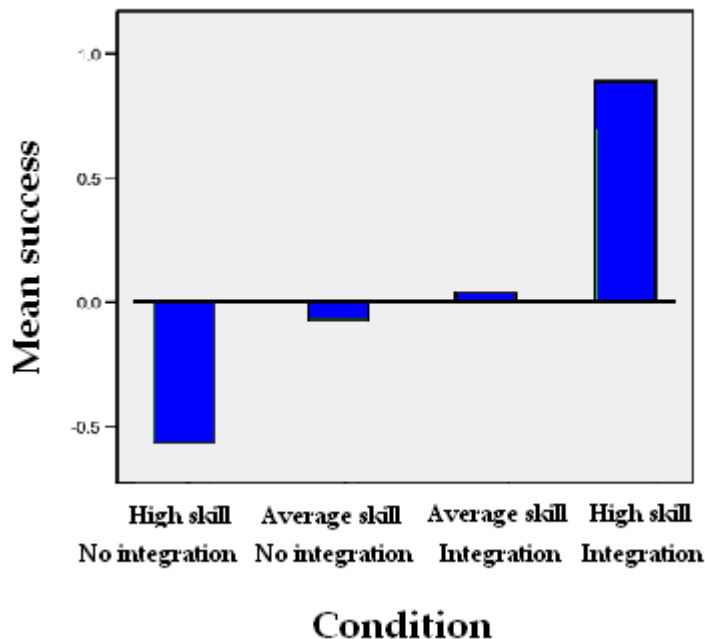
	Google	Google scholar
"Lord Monckton" "global warming"	268000	93
"John Houghton" "global warming"	48800	933
"Rush Limbaugh" "global warming"	3240000	1240
"James Hansen" "global warming"	864000	2860

Lord Monckton, Rush Limbaugh and other climate warming deniers have been very successful in fostering swarm madness. Whereas the great majority of climate scientists see global warming as a serious risk to the planet, a minority of the world's public do.¹⁵ How did this happen?

The anatomy of swarm madness

A clever experiment has been done to discover the conditions under which swarm madness appears.¹⁶ Several teams (think little swarms) were given the task of solving a problem that could *not* be solved by any one particular team member. Solution required a range of expertise. The teams varied both in the level of skill of its members and in whether integration of skills took place. In the case of integration, the members understood and deferred to each other's skills. The results were striking and are reproduced below. You might think that the swarm with the lower skills and no integration would be the least successful. Not so. The swarm that was least successful was the one with *high* skill and no integration! Why did this happen? The key is that the problem was bigger than one expert. When expertise was high and integration non-existent one expert would lord it over the others. When expertise was average but

Skill integration and problem-solving success



integration happened, the combined expertise was greater and sufficient to solve the problem.

Notice that in the worst case, the very cleverness of individuals worked against them in finding a solution. When problems are bigger than individuals, we need something else in addition to cleverness to solve them. What this study suggests is that something was discovered a long time ago by bees – humble wisdom.

In human societies, clever individuals that dismiss the skills of others and take others with them is a recipe for swarm madness. This is what Lord Monckton has done. As we have seen, the public are listening to Lord Monckton quite out of proportion to his expertise in climate science. The reason? He has great ability in waggle-dancing. This is how an admirer described him: "He's quicker on his feet than any debater I've seen. He's funny. He's witty. He's ferociously clever and a master of his brief."¹⁷ Before the public, Monckton performs with conviction, confidence, eloquence and charm. He sprinkles his presentations with Latin phrases and abstruse mathematical formulae. He has been invited several times to speak to US congress on climate. He claims to have found a cure for HIV, Graves' disease, multiple sclerosis, influenza and food poisoning and that he won the Falklands war for Britain by persuading the British government to use biological warfare.¹⁸ There is no problem bigger than Lord Monckton. One gets the impression that for Monckton there is only one division of labour. There is his lordship who knows stuff and then there are others. Monckton is iconic of the sceptic individualist. He will not abide by the consensus because truth is not decided by consensus but by the evidence. Philosopher Mary Midgley points out it may indeed be progress to go from childish dependence to adolescent independence, but this is not yet maturity. Mature people are *interdependent*.¹⁹ It is, of course, climate scientists not experts in the classics that are best able to sceptically evaluate the evidence. It is the conceited worker that thinks he can personally evaluate the evidence better than the great majority of scouts. Monckton has vastly more intelligence than an individual bee. The colony, however, has more maturity and more wisdom.

It is encouraging that philosophers understand mature interdependence in the context of global warming. It has been remarked "Most philosophers who have written on the subject have not scrutinized the science, but instead have appealed to the authority of the Intergovernmental Panel on Climate Change (IPCC)."²⁰ The authors behind this quote were not been complimentary and evidently did not understand where their expertise ends unlike their colleagues!

It is tempting to think that the solution to swarm madness is to merely educate the public. However, research has shown that "Members of the public with the highest degrees of science literacy and technical reasoning capacity were not the most concerned about climate change" suggesting the "insufficiency of a communication strategy that focuses only on transmission of sound scientific information."²¹

Climate scientist John Abraham has nobly taken a lot of trouble to educate the public in refuting Monckton.²² He writes, "I encourage people to view both of our arguments and make their own conclusions. I stand by my work and welcome judgment by the public and the scientific community."²³ But there is a problem. Who is this public? The public is the single mother trying to hang onto her job while raising her children. The public is the scientist trying to juggle researching, teaching and administration in a field *other* than climate. With respect to most matters the public are workers paying tax so that the *scouts* can do the job of judging climate change arguments. Time spent evaluating climate science is time away from their jobs. When everyone tries to do everything, there is a breakdown in division of labour. Wisdom suggests that human society would do well to be as practical as the hive.

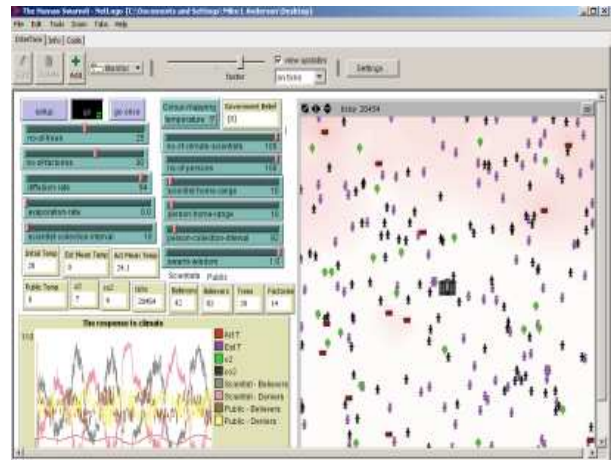
Wisdom also suggests that we have grounds to be very sceptical of the assumption that the health of the planet hangs merely on scepticism, intelligence and education. It also hangs on humility, wisdom and trust. A society that champions the former over the latter will produce and idolize the false scouts of the world. Swarm madness will be the beginning of bitter fruit indeed. It was in the context of individuals having different God-given gifts and working together as a group that the apostle Paul wrote, "Do not think of yourself more highly than you ought, but rather think of yourself with sober judgment."²⁴ To put him²⁵ in terms of the swarm, "Are all queens? Are all drones? Are all scouts? Are all workers?" We need a public that know where their expertise ends and other's begins, when to be sceptical and when to trust. Of course, outside of their fields of expertise, scientists should be viewed with utmost scepticism.²⁶

As the world becomes more complex, we need extra divisions of labour. We need at least two distinct types of waggle dancers - ones that dance for scouts (the scholars) and ones that dance for workers (the general public). We need this special skill because the kind of waggle dance that appeals to the public is different to the kind that appeals to scholars. The public are more affected by charisma, anecdote and humour. Scholars are impressed by numerate, peer-reviewed publications. We need a waggle-dancer that understands the heart of the swarm, understands the science, and has bee wisdom. This waggle-dancer's first priority is not to take on the task of scientifically proving anything to the public – which is impractical anyway. Instead, his first priority is to communicate to the public what the climate scientists have proved amongst themselves.

(By the way, we also desperately need public relations officers that are prepared to waggle-dance for the bees themselves. Globally, bee colonies are disappearing at a phenomenal rate. There are likely to be multiple causes, but a critical one is indiscriminate use of pesticides. Here, too, there are the deniers. It is irony indeed that human folly is leading to the decimation of the very creatures that can teach us wisdom!)

Simulating swarm wisdom and madness

It is possible to simulate different decision-making systems and the consequences on climate change (see screenshot). To do this I used a powerful modelling environment for simulating complex dynamic systems called *Netlogo*. I have called the freeware program *ClimateWise*. The user is able to experiment with a host of variables including quorum and majority thresholds and the level of dissemination of science and anti-science. It is available here.²⁷ The program soberingly illustrates that a great deal has to be in place if climate change is to be dealt with effectively.



Spiritual madness

Since humans are spiritual creatures, being in touch with scientific *and* spiritual reality is important for the health of the planet. John Houghton writes, "The average American still doubts the science of climate change, despite the IPCC and the unambiguous statement by the national science academies of the G8 nations (including the US), plus those of China, India and Brazil... there is widespread suspicion of science, fostered by the feeling that science goes against the Bible. This is very unfortunate; it takes a very small view of God, and a very inadequate view of science."²⁸

As I wrote elsewhere, "How much of our technology is functional and how much of it is a monument to human glory?" This is where people need to look up at Jesus on the tree. "When Jesus prays, "Father, the time has come. Glorify your Son, that your Son may glorify you,"²⁹ he is talking about his crucifixion. While the wicked were cutting down a tree to display Roman glory, the Father was revealing himself. Jesus showed that one can achieve glory without carbon-producing trappings. Instead, he used sacrifice. The God revealed through the cross is the One who made himself nothing. Jesus leaves an enormous spiritual footprint with a tiny carbon one. This is how to impact the planet! How the world needs to worship The Rabbi on the tree for the world's sake!"

The heart of the swarm

Evolution works marvels, but it does not produce perfection. Humans are adapted to biasedly respond to local, concrete, human-sized problems rather than general, global-sized ones. A Doberman-pincher, especially when it is chasing me, seems more real than the problem of global warming. A crying baby comes across as more urgent than the rise

in carbon dioxide levels in the atmosphere even though the latter threatens a lot of crying. There is Another who has also had to contend with swarm madness. Perhaps we can learn something about this from Him? Climate change is a little like God. God is not human sized. He is inscrutable. He is eternal whereas we are locked in time. He is omnipresent whereas we are localised. How did humans respond to God? Swarm madness. Instead of following the Unfathomable One, they went after local idols. Instead of worshipping the Creator, they worshipped something they had crafted.

Reaching the swarm

Remarkably, God the Father, with all his omnipotence and omniscience did not choose to deal with the problem of swarm madness on his own. Even he used a division of labour. The Father, understanding the heart of the swarm, dealt with his inaccessibility by coming as a human person. He made himself concrete by embodying himself in Jesus Christ. God was not so high and mighty that he refused to speak to us in less than some theologically technical heavenly language. On the contrary, he humbled himself and spoke in ordinary human language as a human being. The Good News is an anecdote about a carpenter from Nazareth. In so doing, God has forever sanctified popularisation as a holy activity. Would we not do well to take a leaf from Jesus in dealing with global warming and the masses? We need to honour the special waggie-dancers that are committed to translating scout communication to for the workers. And they need to see it as a vitally important, even holy activity.

In the age of the Internet a huge amount of information is made available to the public. However, it is not necessarily the best information that is the most accessible. In this situation it is easy to be beguiled into the conceit that I can evaluate the science of climate change myself. However, with the complexity of the myriad issues facing the world, how necessary it is for me to leave certain things to others better qualified. How necessary it is to have a humble wisdom. For inspiration we can look to lowly creatures – the bees. And we can do no better than look to Wisdom personified. Jesus left the sovereign foreordaining of his death to the Father and his rising from the dead to the Holy Spirit. He acknowledged – no embraced his limitations - even to the point of death for the greater good of the swarm. He was content to leave omniscience³⁰ and omnipresence to the Father and be a preacher in Galilee. And, even after the resurrection, he leaves the telling of the Gospel to the church and conversion to the Holy Spirit. It is a wise and humble swarm that emulates Jesus and his bees.

Notes

¹ Seeley, T. D. (2010) *Honeybee Democracy*. Princeton University Press, Princeton, p. 7.

² Miller, P (2010) *Smart Swarm*. Penguin Books Ltd, London.

³ Proverbs 11:14

-
- ⁴ There is evidence that the quorum threshold has been honed by evolution to be an optimized trade-off between speed and accuracy.
- ⁵ Of course, bees are not nearly sentient enough to be truly humble or wise – they merely illustrate the virtues.
- ⁶ Seeley, T. (2010) *The Five Habits of Highly Effective Honeybees*. Princeton University Press, p. 219.
- ⁷ Proverbs 11:2. See also James 3:13.
- ⁸ The remarkable thing about the King of Kings is that he had none of the trappings associated with earthly kings. Jesus’s divinity shone through anyway.
- ⁹ Anderegg, W.R. L., Prall, J.W., Harold, J. and S. H. Schneider (2010) [Expert credibility in climate change](#). Proceedings of the National Academy of Sciences. June 21, 2010, doi: 10.1073/pnas.1003187107.
- ¹⁰ An advanced search on the *The Wall Street Journal*’s archive (<http://online.wsj.com>) received 1750 for the former and 1672 hits for the latter. Accessed 4 July 2012.
- ¹¹ http://en.wikipedia.org/wiki/Intergovernmental_Panel_on_Climate_Change
- ¹² Boykoff, M.T and J. M. Boykoff (2004) Balance as bias: global warming and the US prestige press. *Global Environmental Change* 14: 125–136
- ¹³ 1310 and 12 results respectively. Accessed 9 July 2012.
- ¹⁴ http://en.wikipedia.org/wiki/John_T._Houghton
- ¹⁵ <http://www.gallup.com/poll/147203/Fewer-Americans-Europeans-View-Global-Warming-Threat.aspx#2>.
- ¹⁶ Woolley, A. W., Gerbasi, M., Chabris, C.F., Kosslyn, S. M., and J. R. Hackman (2007) What Does It Take to Figure Out What Is Going On? How Team Composition and Work Strategy Jointly Shape Analytic Effectiveness. The Group Brain Project. Technical Report No. 4.
- ¹⁷ <http://blogs.telegraph.co.uk/news/jamesdelingpole/100042295/id-rather-have-monckton-in-a-foxhole-with-me-than-monbiot/>
- ¹⁸ <http://www.guardian.co.uk/environment/blog/2009/dec/10/viscount-monckton-ukip>.
- ¹⁹ Midgley, M. (1989) *Wisdom, Information and Wonder*. Routledge, pp. 117-125.
- ²⁰ Irwin, W. and B. Williams (2010) An Ethical Defense of Global-Warming Skepticism Reason Papers 32 : 7-27
- ²¹ Kahan, D.M. et al (2012) The polarizing impact of science literacy and numeracy on perceived climate change risks.
<http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1547.html>
- ²² <http://www.stthomas.edu/engineering/jpabraham/>
- ²³ <http://www.skepticalscience.com/abraham-reply-to-monckton.html>
- ²⁴ Romans 12:3.
- ²⁵ 1 Corinthians 12:29.

²⁶ It should be emphasised that we are all workers in most things and scouts in very few.

²⁷ http://ccl.northwestern.edu/netlogo/models/community/ClimateWise1_2

²⁸ Interview with Sir John T. Houghton, Caspar Henderson Reason and Light column, New Statesman, 15 May 2006, <http://www.newstatesman.com/200605150065>.

²⁹ John 17:1.

³⁰ Matthew 24:36.

News briefs (From the Internet)

Major study confirms that global warming is accelerating

A study beginning in 1992, spanning 20 years and involving ten satellite missions has confirmed that the shrinking of Greenland's ice sheet is accelerating. The island shed ice five times as fast in 2005-2010 as it did in 1992-2000. Together Greenland and Antarctica have lost more than 4000 billion metric tonnes of ice in that time period accounting for one fifth of the sea-level rise. Unfortunately, researchers still do not understand the complexity of the factors behind sea-level rise to accurately estimate future levels.

A. Shepherd et al. A reconciled estimate of ice-sheet mass balance. *Science*, Vol. 338, November 30, 2012, p. 1183. doi:10.1126/science.1228102

The Intergovernmental Panel on Climate Change has underplaying the rate of climate change

The U.N.'s Intergovernmental Panel on Climate Change (IPCC) is the most recognised body on global warming. Recent research has revealed that it has underestimated the pace of climate change. For instance, the IPCC predicted that the Arctic would lose its summer ice in 60 years at the earliest. More recent data indicates that this could happen with 20 years. It is scary to think that many media voices consider the IPCC to be alarmist!

http://www.scientificamerican.com/article.cfm?id=climate-science-predictions-prove-too-conservative&WT.mc_id=SA_WR_20121212

Efficiency of organic solar cells nearly tripled

Engineers at Princeton University have discovered a cheap way to improve the efficiency of solar cells in converting light to electricity. The system uses nanotechnology to sandwich plastic and metal. The cell absorbs 96 percent of direct light reaching its surface. The technology is ready for commercial use.

Stephen Y. Chou, Wei Ding. Ultrathin, high-efficiency, broad-band, omni-acceptance, organic solar cells enhanced by plasmonic cavity with subwavelength hole array. *Optics Express*, 2012; 21 (S1): A60 DOI: 10.1364/OE.21.000A60

<http://www.sciencedaily.com/releases/2012/12/121206203419.htm>

An effective pain-killer that costs nothing

There is something that is more effective than the strong pain-killer codeine. Sleep. Subjects who slept an extra two hours could keep their finger on a pain source for longer than those who slept the usual eight even if they were given 60mg of codeine. The results suggests that sleep deprivation is a factor behind increased sensitivity to pain.

<http://www.telegraph.co.uk/health/healthnews/9715399/Extra-sleep-can-be-more-effective-than-painkillers.html>

Mercury has ice and organic material

The planet closest to the sun is not the first place you would look for ice and organic material. yet evidence suggests that it is there courtesy of asteroida and comets. It turns out that there are places deep in impact craters that are permanently shadowed and at temperatures of -173 degrees Celsius. The finding is significant because it sheds light on the origin of water and other materials that are essential for life.

G. Neumann et al. Bright and Dark Polar Deposits on Mercury: Evidence for Surface Volatiles. Science. Published online November 29, 2012.

Death of big old trees a global epidemic

Trees older than a century are dying at an unprecedented rate. It is happening in woodlands, savannahs, farms and cities. It is happening rapidly. Since big trees provide habitat for many animal species and recycle nutrients the impact on ecosystems is severe. The cause? Global warming, logging and drought amongst other factors.

David B. Lindenmayer, William F. Laurance, and Jerry F. Franklin. Global Decline in Large Old Trees. Science, 2012; 338 (6112): 1305-1306 DOI: 10.1126/science.1231070

Anglers are driving fish evolution

Anglers inadvertently tend to catch bass that make good dads. The qualities that make bass males quick to succumb to lures are linked to good parenting skills and reproductive success. This suggests that angling pressure may force species to develop traits that will make their harvest even less sustainable in the future. Good fish management will require looking into ways of softening the evolutionary pressures.

D.A.H. Sutter et al. Recreational fishing selectively captures individuals with the highest fitness potential. Proceedings of the National Academy of Sciences. doi: 10.1073/pnas.1212536109

Even low exposure to pesticides reduces brain function

Research has revealed that sustained exposure to even low levels of organophosphates reduces the brain's memory, processing speed and ability to think abstractly. The research reviewed as many as fourteen independent studies. Surely this is capatilism at

its best? Not only do the manufacturers make profits from the pesticides, but they reduce their customers ability to properly evaluate the product.
<http://www.telegraph.co.uk/health/healthnews/9716249/Pesticide-exposure-harms-memory.html>

You are not your own man

We are accustomed to regarding ourselves as having a unique identity. However, recent research is revealing that we harbour cells from other individuals even within our brains! The condition is called microchimerism. Women who harbour these cells are less likely to have Alzheimer's disease for reasons that are unclear. Transfer is believed to occur through the placenta, through nursing and even between twins during gestation.

http://www.scientificamerican.com/article.cfm?id=scientists-discover-childrens-cells-living-in-mothers-brain&WT.mc_id=SA_WR_20121212

Humour from the Internet

Funny church signs

The class on prophecy has been cancelled due to unforeseen circumstances

Bored? try a missionary position

Prayer - wireless access to God with no roaming fees

Salvation guaranteed - or your sins cheerfully refunded

Have trouble sleeping? We have sermons Come hear one.

Whoever's praying for snow pleez stop

Now is a good time to visit. Our pastor is on vacation

Getting high on heaven: the argument from near-death experience

Mike L Anderson

When last did you make that trip to heaven? You didn't? It is quite understandable if you feel left out. Trips to heaven are quite the rage considering the spate of books coming out on the subject. There is *Heaven is for Real*, *The Boy Who Came Back from Heaven* and *90 Minutes in Heaven* to name just a few. The first sold 7 million copies. It tells of the near-death experience of the then four-year-old Colton Burpo. This is what the General Superintendent of the Wesleyan Church had to say about it, "Colton's story could have been in the New Testament-but God has chosen to speak to us in this twenty-first century through the unblemished eyes of a child, revealing some of the mysteries of heaven. The writing is compelling and the truth astonishing, creating a hunger for more."¹

What is the thinking Christian to make of all this?

There are two main messages. I've experienced heaven and you need to know about it.

"You need to know about my trip to heaven"

Let's deal with the second first. Assuming for the sake of argument, that these kids have been to heaven, do we really need to know about it?

It is striking that those who at best have only had a few minutes of heaven have inspired entire books about the subject whereas Jesus, the real expert (he said, "No one has ever gone into heaven except the one who came from heaven--the Son of Man"² said so little. Perhaps God wants to inform us about heaven on a strictly need to know basis? He certainly forbade the Apostle Paul from speaking about paradise.³

It has been argued the stories of near-death experience reassure people in their faith. But why would I need my faith reassured by a kid, when it is amply assured by Jesus? Three days in the tomb made sure that Jesus was really dead. Many hundreds seeing him alive after his death made sure that he really rose from the dead as had been prophesied.⁴ Surely knowing this Jesus is enough. Here is the chief problem with the near-death stories. While they may say positive things about Jesus, it comes with the message, "but you need something

more than him." At best they deflect attention away from the sufficiency of Christ.

Near-death purveyors presume that if you want to be at peace or upbeat, you cannot do better than an encounter with heaven. But Judas and others who refused to believe were left stone cold even from extended encounters with God incarnate. Perhaps a believer encountering the Glorified Christ would do the trick? Well that happened to the Apostle John. Even *this* disciple, whom Jesus loved, "fell at his feet as though dead".⁵ John desperately needed reassurance not *through* an encounter with the Glorified Christ, but *because* of it. No wonder when his "eyes were like blazing fire" and his face "like the sun shining in all its brilliance."

How does Jesus reassure John? He reminded him of the Gospel and of who Jesus is. He says, "Do not be afraid. I am the First and the Last. I am the Living One; I was dead, and behold I am alive for ever and ever! And I hold the keys of death and Hades."⁶ Jesus did not tell John anything he didn't know before. John just needed to remember and believe. All we need to face death and God has already been given to us. Seeking assurances from the words of children is clutching at straws and is exactly the wrong message for Christians to send to the world. What the world needs is Christians who clutch the Cross.

"I have experienced heaven"

Since the average Christian has never been to heaven, how can we possibly evaluate the claims of those who claim they have? Is this not presumptuous? But we do have a yardstick. Jesus.

Take the following exchange between Colton and his father.

"Colton, which side of God's throne was Jesus sitting on?" I asked. Colton climbed up on the bed and faced me on his knees. "Well, pretend like you're in God's throne. Jesus sat right there," he said, pointing to my right side ... Wow. Here was a rare case where I had tested Colton's memories against what the Bible says, and he passed without batting an eye. But now I had another question, one I didn't know the answer to, at least not an answer from the Bible.

"Well, who sits on the other side of God's throne?" I said.

"Oh, that's easy, Dad. That's where the angel Gabriel is. He's really nice.""⁷

According to Scripture Gabriel is merely an angel.⁸ If you are going to put an angel on God's left hand side should it not be the *archangel* Michael?⁹ But if anyone should be on the left, it should be the third member of the Trinity!

Consider what Jesus says. "... to sit at my right or left is not for me to grant. These places belong to those for whom they have been prepared by my Father."¹⁰ How can the Father be preparing a place for Jesus' left side when God the Father should be there? Remember that the writer to the Hebrews says, " Let us fix our eyes on Jesus, the author and perfecter of our faith, who for the joy set before him endured the cross, scorning its shame, and sat down at the right hand of the throne of God."¹¹ We can avoid getting into a tizzy about who sits where by remembering something else Jesus said, "God is spirit, and his worshipers must worship in spirit and in truth."¹² Since God is spirit, he does not have a left and right hand side. Nor does he need a throne to sit on. The writer to the Hebrews is simply affirming the high position of Jesus.

It is understandable that Colton does not understand metaphor. It is his pastor father that should know better. Instead of hanging onto his son's words, he should have smiled to himself and in time gently explained to Colton the nature of God. What is extraordinary is not the vivid imagination of children (Colton says Jesus rode a rainbow-coloured horse and people had wings and halos), but the naivety of the parents that would believe them. One even says to his son, "You are my hero and the person I most want to be like when I grow up!"¹³

The place of experience

We need not assume Colton and company are lying. Scientific research is revealing that the brain becomes flooded with natural chemicals during a near-death experience. The effect is similar to a drug trip and explains why the experience is so vivid. Astute reader that you are, you will notice that the argument from near-death experience is a particular case of the argument from personal experience and is a fallacy. It proves nothing either way. Saver and Rabin, writing in the *Journal of Neuropsychiatry* explain, "Religious experience is brain-based. This should be taken as an unexceptional claim. All human experience is brain-based, including scientific reasoning, mathematical deduction, moral judgment, and artistic creation, as well as religious states of mind. Determining the neural substrates of any of these states does not automatically lessen or demean their spiritual significance. The external reality of

religious precepts is *neither confirmed nor disconfirmed* by establishing brain correlates of religious experience."¹⁴ [italics mine]

So, brain-based religious experience proves nothing. All experience is brain-based. It may or may not be grounded in reality. If there is a lion charging towards me, it is my brain that causes my perception of it. The lion also plays a role - a vital role. My experience is grounded in the reality of the lion. If the lion is pink then my experience is merely brain-based and not grounded in reality. Experience does not determine external reality. External reality may or may not determine experience. This is true for all kinds of experience including spiritual experience.

Rather than contemplating someone's few minutes of near-death experience, we are better off contemplating the One who had a three-day real-death experience. Why did Jesus say nothing about his three days of real death? It is because Christians are called to put their faith in a Person, not an experience. Experience is untrustworthy. From an experiential point of view, Good Friday was Bleak Friday. Very Bleak. Apparently this One was being destroyed along with all he stood for. The disciples were, to a man, downcast and dejected. From a biblical point of view that Friday is the centre-point of history. While men were executing Jesus, the Father was executing justice and redemption. While men were broadcasting their evil nature, God was broadcasting his nature - his holiness, mercy, love and wisdom. It has been said that those with an argument are at the mercy of those with an experience. But those grounded in the Christ, dead and risen, are at the mercy of no-one.

It is human and quite natural to seek reassurance in facing one's Maker. Even the Apostle John needed as much. Where is the best place to go for that? Not a heavenly trip, but to remember that the Lion of Judah is also the Lamb of God. Christians already have everything they need in Christ alone.

Notes

¹ Burpo (2010) *Heaven is for Real: A Little Boy's Astounding Story of His Trip to Heaven and Back*. Thomas Nelson, Nashville, Tennessee, dust jacket.

² John 3:13.

³ 2 Corinthians 12:4.

⁴ 1 Corinthians 15:6, Psalm 16:8-10 cf. Acts 2:25-28.

⁵ Revelation 1:17.

⁶ Revelation 1:17-18.

⁷ Burpo (2010) *Heaven is for Real: A Little Boy's Astounding Story of His Trip to Heaven and Back*. Thomas Nelson, Nashville, Tennessee, p. 101.

⁸ Luke 1:19.

⁹ Jude 1:9.

¹⁰ Matthew 20:23.

¹¹ Hebrews 12:2.

¹² John 4:24.

¹³ Malarkey (2004) *The Boy Who Came Back from Heaven: A Remarkable Account of Miracles, Angels, and Life Beyond This World*. Tyndale House Publishers, Carol Stream, Illinois, p. viii.

¹⁴ Saver, J.L. and J. Rabin (1997) The Neural Substrates of Religious Experience. *The Journal of Neuropsychiatry* 9 (3):498-510.

Feature article

Faith and Superstition

George Romanes

Whether or not Christianity is true, there is a great distinction between these two things. For while the main ingredient of Christian faith is the moral element, this has no part in superstition. In point of fact, the only point of resemblance is that both present the mental state called *belief*. It is on this account they are so often confounded by anti-Christians, and even by non-Christians; the much more important point of difference is not noted, viz. that belief in the one case is purely intellectual, while in the other it is chiefly moral. *Qua* purely intellectual, belief may indicate nothing but sheer credulity in absence of evidence; but where a moral basis is added, the case is clearly different; for even if it appears to be sheer credulity to an outsider, that may be because he does not take into account the additional evidence supplied by the moral facts.

Faith and superstition are often confounded, or even identified. And, unquestionably, they are identical up to a certain point—viz. they both present the mental state of *belief*.

All people can see this; but not all people can see further, or define the *differentiae*. These are as follows: First, supposing Christianity true, there is the spiritual verification. Second, supposing Christianity false, there is still the moral ingredient, which *ex hypothesi* is absent in superstition.

In other words, both faith and superstition rest on an intellectual basis (which may be pure credulity); but faith rests also on a moral, even if not likewise on a spiritual. Even in human relations there is a wide difference between 'belief' in a scientific theory and

'faith' in a personal character. And the difference is in the latter comprising a moral element. 'Faith-healing,' therefore, has no real point of resemblance with 'thy faith hath saved thee' of the New Testament, unless we sink the personal differences between a modern faith-healer and Jesus Christ as objects of faith.

Belief is not exclusively founded on objective evidence appealing to reason (opinion), but mainly on subjective evidence appealing to some altogether different faculty (faith). Now, whether Christians are right or wrong in what they believe, I hold it as certain as anything can be that the distinction which I have just drawn, and which they all implicitly draw for themselves, is logically valid. For no one is entitled to deny the possibility of what may be termed an organ of spiritual discernment. In fact to do so would be to vacate the position of pure agnosticism *in toto* - and this even if there were no objective, or strictly scientific, evidences in favour of such an organ, such as we have in the lives of the saints, and, in a lower degree, in the universality of the religious sentiment. Now, if there be such an organ, it follows from preceding paragraphs, that not only will the main evidences for Christianity be subjective, but that they ought to be so: they ought to be so, I mean, on the Christian supposition of the object of Christianity being moral probation, and 'faith' both the test and the reward. From this many practical considerations ensue. E.g. the duty of parents to educate their children in what they *believe* as distinguished from what they *know*. This would be unjustifiable if faith were the same as opinion. But it is fully justifiable if a man not only knows that he believes (opinion) but believes that he knows (faith). Whether or not the Christian differs from the 'natural man' in having a spiritual organ of cognition, provided he honestly believes such is the case, it would be immoral in him not to proceed in accordance with what he thus believes to be his knowledge. This obligation is recognized in education in every other case. He is morally right even if mentally deluded.

Huxley, in *Lay Sermons*, says that faith has been proved a 'cardinal sin' by science. Now, this is true enough of credulity, superstition, &c., and science has done no end of good in developing our ideas of method, evidence, &c. But this is all on the side of intellect. 'Faith' is not touched by such facts or considerations. And what a terrible hell science would have made of the world, if she had abolished the 'spirit of faith' even in human relations. The fact is, Huxley falls into the common error of identifying 'faith' with opinion.

Supposing Christianity true, it is very reasonable that faith in the sense already explained should be constituted the test of divine acceptance. If there be such a thing as Christ's winnowing fan, the quality of sterling weight for the discovery of which it is adapted cannot be conceived as anything other than this moral quality. No one could suppose a revelation appealing to the mere intellect of man, since acceptance would thus become a mere matter of prudence in subscribing to a demonstration made by higher intellects. It is also a matter of fact that if Christianity is truthful in representing this world as a school of moral probation, we cannot conceive a system better adapted to this

end than is the world, or a better schoolmaster than Christianity. This is proved not only by general reasoning, but also by the work of Christianity in the world, its adaptation to individual needs, &c. Consider also the extraordinary diversity of human characters in respect both of morality and spirituality though all are living in the same world.

Out of the same external material or environment such astonishingly diverse products arise according to the use made of it. Even human suffering in its worst forms can be welcome if justified by faith in such an object. 'Ills have no weight, and tears no bitterness,' but are rather to be 'gloried in.' It is a further fact that only by means of this theory of probation is it possible to give any meaning to the world, i.e. any *raison d'être* of human existence. Supposing Christianity true, every man must stand or fall by the results of his own conduct, as developed through his own moral character. (This could not be so if the test were intellectual ability.) Yet this does not hinder that the exercise of will in the direction of religion should need help in order to attain belief. Nor does it hinder that some men should need more help and others less.

Indeed, it may well be that some men are intentionally precluded from receiving any help, so as not to increase their responsibility, or receive but little, so as to constitute intellectual difficulties a moral trial. But clearly, if such things are so, we are inadequate judges.

It is a fact that we all feel the intellectual part of man to be 'higher' than the animal, whatever our theory of his origin. It is a fact that we all feel the moral part of man to be 'higher' than the intellectual, whatever our theory of either may be. It is also a fact that we all similarly feel the spiritual to be 'higher' than the moral, whatever our theory of religion may be. It is what we understand by man's moral, and still more his spiritual, qualities that go to constitute 'character.' And it is astonishing how in all walks of life it is character that tells in the long run.

George John Romanes FRS (20 May 1848 – 23 May 1894) was an Christian evolutionary biologist who gave up and then returned to his faith. This excerpt is taken from *Thoughts on Religion* Paternoster Row, London.

If you found this e-zine helpful please give it to someone else.

Science and Faith is a free Christian e-zine published by the Montane Publishers, P O Box 218, Betty's Bay, 7141, South Africa. Co-editors: Andy D Potts, Mike L Anderson
Copyright (2012) held by the individual authors of the articles. This e-zine may be freely copied on condition it is done so in its entirety without alteration and free of charge.

To subscribe to Science & Faith put subscribe in the subject line of an e-mail message to sciencefaith@mikelanderson.com

To unsubscribe to Science & Faith put unsubscribe in the subject line of an e-mail message to sciencefaith@mikelanderson.com

Board: Dr A Potts, Revd R Anderson, M Koegelenberg,
Bank Details: Mike Anderson Donation Account, Standard Bank,
Rondebosch, Account No: 075594404, Branch Code: 25009,
Savings Account, PlusPlan SME
