

Synthetic biology

While there is not a comprehensive statement, as yet, regarding synthetic biology by Canadian Yearly Meeting, this is a concern that is active and being further seasoned through Canadian Friends Service Committee.

There are three parts to this document:

1. Minute approved by Canadian Yearly Meeting in Session in 2012 (minute 2012-65).
2. The report of the Special Interest Group that considered the issue of synthetic biology during Yearly Meeting sessions, 2012.
3. The document in advance for this Special Interest Group, prepared by Friends through Canadian Friends Service Committee.

1. CYM minute 2012-65:

Report from the Special Interest Group on Synthetic Biology: We received a report from Fred Bass, one of the organizers of this special interest group on Synthetic Biology. The report contains suggestions for actions to be taken by Canadian Yearly Meeting and CFSC which we affirm. We ask the relevant bodies to take action as quickly as possible. We realize that most Monthly Meetings will not have the expertise to address these concerns so we ask Monthly Meetings to give consideration to these issues as soon as possible after receiving the relevant background information from CFSC. The report is attached as Appendix H.

2. Report from Synthetic Biology Special Interest Group (SIG) held August 16, 2012

About 18 Friends attended this SIG. Those attending the SIG agreed that Friends' core values of spiritually-based simplicity and other testimonies offer a firm ethical and moral basis for caution about synthetic biology. These testimonies form an appropriate antidote to the general ignorance technology-developers and governments have shown to the complex relationships found among species within and across ecosystems.

We ask Canadian Yearly Meeting to add to our previously-articulated caution about biotechnology further caution about synthetic biology; specifically we ask:

1. CYM to embody this concern by requesting the Biotechnology Reference Group of the Canadian Council of Churches to consider how it might raise awareness about synthetic biology with all faiths. Three queries posed by Keith Helmuth apply [see Quaker Institute for the Future Pamphlet #3 *Genetically Modified Crops: Promises, Perils, and the Need for Public Policy* (2011), p. 41]:

- a) How can the benefits of this technology be applied in an equitable way, a way that serves the common good?
- b) How can damaging and potentially disastrous consequences to ecosystems and social systems be foreseen and forestalled?

- c) Are there zones of organic processes and ecological relationships that should be ethically off limits for synthetic biology?

2. CFSC to provide awareness-raising information to monthly meetings so that they may meaningfully consider the above queries and report back through CFSC. Some attending the SIG offered to join a working group to assist CFSC with this.

3. CFSC to write a short letter to the appropriate federal minister to inquire into government's efforts to protect the common good from unintended social and environmental consequences of any research or development done in the field of synthetic biology.

Fred Bass, Anne Mitchell, Gianne Broughton
for the Special Interest Group on Synthetic Biology
Canadian Yearly Meeting, August 17, 2012

3. Document in Advance prepared for discussion at CYM sessions 2012

Towards a Quaker Perspective on Synthetic Biology

For Discussion at Special Interest Group at Canadian Yearly Meeting Sessions 2012
Prepared by Canadian Friends Service Committee

July 10, 2012

Introduction

In December 2011, the Quaker Peace And Sustainable Communities Committee (QPASC) of the Canadian Friends Service Committee (CFSC) was asked to endorse the draft Principles for the Oversight of Synthetic Biology that had been reviewed by the Biotechnology Reference Group (BRG) of the Canadian Council of Churches (CCC). Anne Mitchell (Toronto Meeting) had served on the BRG as its Quaker representative; she presented the draft Principles, which CFSC endorsed. Over 100 organizations from around the world endorsed the principles and they were formally published this past March (See link #1, Appendix 2).

QPASC thought that Quakers might make a further contribution regarding this issue by addressing it on a spiritual basis, as well as the policy basis expressed in the principles for oversight. Friends might then serve as a model for other faith groups to take a spiritual/ethical position on synthetic biology. Fred Bass, a new member of CFSC serving on QPASC, volunteered to gather some thoughts for this handout, to open the discussion towards a statement based on Quaker principles.

What is “synthetic biology”?

Synthetic biology is the use of computer-assisted, biological engineering to create new biological systems and forms of life that do not exist in nature (See Link #2, Appendix 2).

Synthetic biology presents a number of serious risks: creating virulent, uncontrolled pathogens; establishing new life forms with unintended side effects; consuming large tracts of agricultural land and other resources for production of alternative fuels and electricity; expenditure of large

amounts of funds on unproven technology and almost a complete lack of regulation by governmental authorities concerned with public health.

Synthetic biology implies synthetic ecology. Yet, human understanding of ecosystems and pursuing a balanced approach to them is sorely lacking. The history of mankind shows repeated ecological failure in all but a few societies.

What position have others taken?

Thus, a broad, international coalition of civil society groups, including the Biotechnology Reference Group of the Canadian Council of Churches, which included representation from Canadian Yearly Meeting, produced *The Principles for the Oversight of Synthetic Biology*. This joint statement urges the following principles for the assessment and oversight of the emerging field of synthetic biology:

- I. Employ the Precautionary Principle
- II. Require mandatory synthetic-biology-specific regulations
- III. Protect public health and worker safety
- IV. Protect the environment
- V. Guarantee the right-to-know and democratic participation
- VI. Require corporate accountability and manufacturer liability
- VII. Protect economic and environmental justice

What might Friends contribute?

Friends may wish to add, and suggest to other faith groups that they add, a moral dimension to the discussion. These are some relevant ethical and moral issues:

- Leaders in synthetic biology make no bones about “playing God” in their quest and achievement of artificial life (please consult link 3, Appendix 2).
- Greed is driving huge, uncontrolled investment of funds and resources in SB (please consult links 3 ,4,5, Appendix 2).
- Again it is the people of developing nations who are most at risk from SB (please consult link 4, Appendix 2).

The direction and push of synthetic biology are well explained in the 2011 Sutherland P Gardner lecture by Marilyn Manzer:

The idea of mastery was born with agriculture—master, as opposed to connection—and from that idea flowed an altogether new set of values, the values of Enterprise... For the farmer, land, animals, and even human beings were resources that he must bring under control, and the man most adept at exploiting those resources was rewarded.

With development of the “culture of enterprise,” we had to elevate ourselves above the Spirit-filled local ecosystem. We needed a new concept of divinity. This was provided in the first two chapters of Genesis which posited that God intended to have dominion over

every other living thing—an idea completely opposite to the values of “belonging.”¹ With the culture of enterprise God also underwent a transformation, becoming masculine and supreme... God was relocated to the heavens, to oversee things... The values of enterprise promote disconnection from nature, from other people, and from Spirit.²

Individualism, ingenuity, and inventiveness – the culture of enterprise- have dominated western civilization. We exalted an economic system based on private gain. Our blind belief in this system has inspired war against alternative economic systems all over the world. This belief is akin to religious fanaticism, based on unexamined ideology.... It destroys the basic factors of production-nature (ecological systems), people (individual and social well-being) and capital (both manufactured and financial) by treating them as commodities always available for sale at a price determined by markets.

Friends’ core value of spiritually-based simplicity offers a firm ethical and moral basis for caution about synthetic biology. Such simplicity forms an appropriate antidote to the general ignorance science and governments have shown to the complex relationships found among species within and across ecosystems. Spiritually-based simplicity grounds us in the Precautionary Principle and makes it a firm and conserving basis for advancing the interests of people and life. In Appendix 1, we have gathered some quotations taken from Britain Yearly Meeting’s “Quaker Faith and Practice” to illustrate the Quaker faith in spiritual simplicity and its potential relevance to synthetic biology.

Conclusion

Synthetic biology represents a life-threatening challenge to which Friends may wish to apply solid Quaker values, particularly those of simplicity that is spiritually driven.

Friends may wish to invite other faith groups to express their spiritual concerns about the mode of development of synthetic biology.

Appendix 1: Excerpt’s from Britain Yearly Meeting’s “Quaker Faith and Practice”

20.32

The Creator of the earth is the owner of it. He gave us being thereon, and our nature requires nourishment, which is the produce of it. As he is kind and merciful, we as his creatures, while we live answerable to the design of our creation, are so far entitled to a convenient subsistence that no man may justly deprive us of it. By the agreements and contracts of our fathers and predecessors, and by doings and proceedings of our own, some claim a much greater share of this world than others: and whilst those possessions are faithfully improved to the good of the whole, it consists with equity. But he who, with a view to self-exaltation, causeth some with their domestic animals to labour immoderately, and with the monies arising to him therefrom, employs others in the luxuries of life, acts contrary to the gracious design of him [the Creator] who is the true owner of the earth; nor can any possessions, either acquired or derived from ancestors, justify such conduct.

John Woolman, 1763

¹ Flinders, CL: Rebalancing the World: Why Women Belong and Men Compete and How to restore the Ancient Equilibrium. San Francisco: Harper Collins, 2009, p 63

² *ibid*, p xix-xx

Relevance: Humans do not own the earth... We live answerable to the design of creation (as opposed to our own design)... equity in the sharing of this world is necessary even when it may contradict legal agreements ...immoderate use of domestic animals or employment of people for the excessive luxury of others is contrary the Creator's design...

20.35

Is our concern for simplicity relevant to our concern for the national economic situation? If we think of simplicity in terms of doing without certain things, of voluntarily reducing our standard of living, I believe this is almost irrelevant at the economic level in view of the scale of the world's need.

If we think of simplicity as a spiritual quality which incidentally simplifies our life styles then I believe it has relevance. This kind of simplicity goes straight to the heart of things and puts first things first, is needed to rectify our distorted values, to help us accept changes in our pattern of living. As this simplicity grows in our hearts and bears fruit in our lives, we may learn and help others to learn that the really abundant life is not to be found in the clutter of material complexity, but in simplicity.

L Hugh Doncaster, 1976

Relevance: Quaker simplicity is not merely doing without; it empowers us to find abundance outside of material clutter.

25.04

All species and the Earth itself have interdependent roles within Creation. Humankind is not the species, to whom all others are subservient, but one among many. All parts, all issues, are inextricably intertwined. Indeed the web of creation could be described as of three-ply thread: wherever we touch it we affect justice and peace and the health of all everywhere. So all our testimonies, all our Quaker work, all our Quaker lives are part of one process, of striving towards a flourishing, just and peaceful Creation - the Kingdom of God.

Audrey Urry, 1994

Relevance: All species are intertwined, in fact, peace, justice and the health of all are also intertwined and part of one piece—a flourishing, just and peaceful Creation.

25.07

As to our own planet which God has given us for a dwelling place, we must be mindful that it is given in stewardship. The power over nature that scientific knowledge has put into our hands, if used in lust or greed, fear or hatred, can bring us to utter destruction. If we choose life we may now feed the hungry, clothe the naked, and heal the sick on a world scale, thus creating new conditions for spiritual advancement so often till now prevented by want. Many of our resources - of oil, of coal and of uranium - are limited. If by condoning waste and luxury we overspend the allowance God has given us, our children's children will be cheated of their inheritance. Limited too is the annual bounty of nature. The material foundation of our life is the tilling of the earth and the growing of food... We must conserve the goodness of the soil and not exploit it.

We must guard, too, the abundance and variety of untamed nature, and not forget the spiritual resources available to us in the continued existence of unoccupied lands. Modern civilisation perpetually threatens our awareness of the true nature of our being which in the presence of the wild we can more easily retain or at length recapture. Year by year silence and solitude are growing more needful, yet harder to obtain, and contacts, by this means, with the mind of the

Creator more tenuous. To conserve nature is thus again a contribution to the fuller life of mankind.

Norfolk, Cambs & Hunts Quarterly Meeting, 1957

Relevance: We are in stewardship of creation and are obligated to use our scientific nature, not for personal gain, but to feed the hungry, clothe the naked and heal the sick. The annual bounty of nature is limited and we must conserve it, rather than exploit it. We are obligated to preserve tracts of nature as we have received them, rather than turn them over for commercial exploitation.

25.14

We are building towards the climax of crisis. The spiritual crisis is folding into the ecological crisis and the ecological crisis is folding into the economic crisis. As Christians, it seems to me, we are now required to critically assess the capital driven market economy and identify it as a false religion, a fabulously productive but ultimately destructive system bringing closure on God's goodness in creation and bringing a creeping atheism to the soul. To look this system straight in the eye and call it to account is a critical test of Biblical faith.

Challenging market economics with a Biblical sense of the goodness of God in creation is to join a spiritual struggle. Faith in God, solidarity with the suffering poor and all other forms of life demands that we take a stand and say, 'This destruction must stop.' We must be perfectly clear about the implications of undertaking this responsibility. It is more than just setting up household recycling bins, growing organic vegetables or riding a bike to work. It is more than a talking job. It is a renovation which will change everything: the way we do business, the way we eat, the way we travel, the houses we build, the products and services we can expect and the prices we pay for them, the way we feel about trees and the way we worship God.

Keith Helmuth, 1990

Relevance: We are building towards a crisis—spiritual, ecological and economic. We have a spiritual duty to recognize the capital-driven market economy to be a false religion and to challenge it, to say this destruction must stop. This will lead to a profound change in the way we do business, food, travel, housing, economics, forestry and, in fact, all products and services.

25.15

Our testimonies against war and inequality have been aimed at persuading people, and reminding ourselves, as to where their wealth lies: in the discovery of a common identity and a common cause with other human beings. Those testimonies apply in the same way to our treatment of our natural environment, which, as Augustine said, is itself like a 'commonwealth', in which every creature in its own way serves the interests of the others. The difference now is that the commonwealth of people and the commonwealth of the earth have become inseparably interrelated and interdependent - have become in fact one new commonwealth of life. Our thinking about God and the world and the way we live in relation to them must now give recognition to that fact.

Rex Ambler, 1990

Relevance: Just as Quakers have held fast against war and inequality, so must we do with the threats to our natural environment which is the commonwealth of all creatures. All are inseparably related and Quakers must live in relationship to this fact.

Appendix 2: Links

1. Principles for the Oversight of Synthetic Biology
www.foe.org/news/blog/2012-03-global-coalition-calls-oversight-synthetic-biology
2. Synthetic Biology 101 - Synthetic Biology Project
www.synbioproject.org/topics/synbio101/
3. Extreme Genetic Engineering: An Introduction to Synthetic Biology ...
www.etcgroup.org/en/node/602
4. Bio-economy versus Biodiversity - Global Forest Coalition
<http://globalforestcoalition.org/wp-content/uploads/2012/04/Bioecono-vs-biodiv-report-with-frontage-FINAL.pdf>
5. The New Biomasters - Synthetic Biology and The Next Assault on Biodiversity and Livelihoods
www.etcgroup.org/en/node/5232