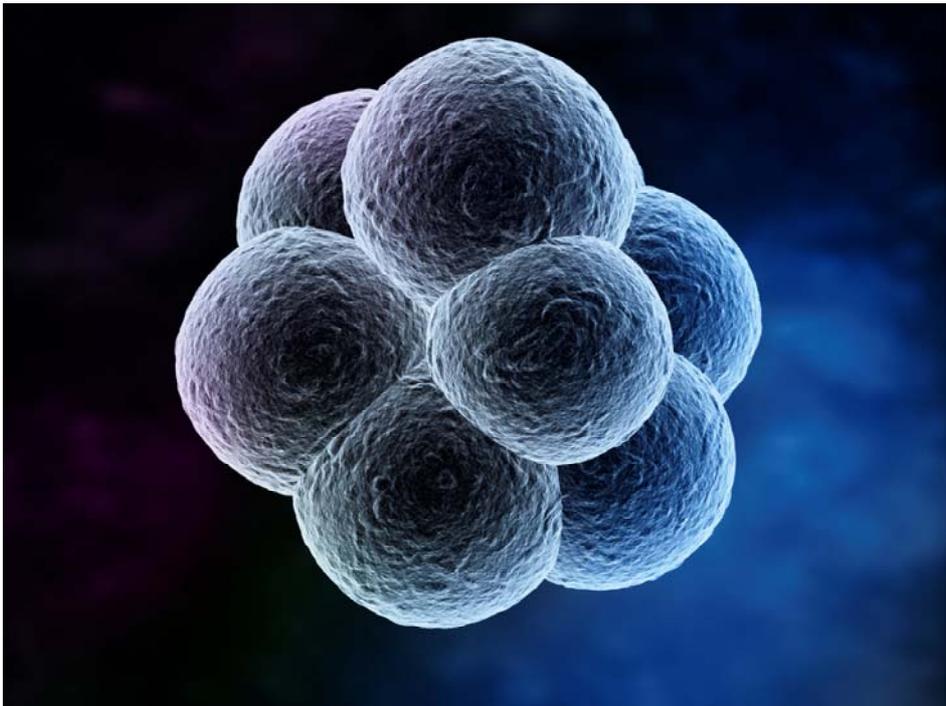


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Exploring Human Heredity

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EDITORIAL

It was Francis Darwin, our first Galton Lecturer in 1915, who said *"In science, the credit usually goes to the one who convinces the world, not to the one to whom the idea first occurs"*. I'm sure this observation applies to many circumstances but it strikes me that he was perhaps speaking about his father Charles and Thomas Malthus.

In 1798, in his famous publication, *An Essay on the Principle of Population*, Malthus spoke of a "perpetual struggle for resources" which Charles Darwin amended to a "perpetual struggle for existence" in *Origin of Species*. Indeed it was the title of his third chapter. On page 14 of this issue, **John Erik Meyer** presents his views on the contribution of Thomas Robert Malthus.

Every year, the Galton Institute supports a number of enterprises by means of various grants. One of the conditions is that the organisers write a report for the *Galton Review*. In this issue, there are a number of such reports which illustrate the wide range of initiatives to which we contribute. Particularly interesting and disturbing is the report on 'Sex-selective abortion in Nepal' (page 4) which I urge you to read.

I also draw your attention to the advertisements on page 20 for our two major conferences for 2017. The Teachers' Conference is in Manchester in June and covers many of the latest advances in genetics, while the Annual Conference in London next November focuses on the 'Legacy of Francis Galton'. Each event has attracted an impressive range of speakers and we are expecting them to be very well attended. Details of both can be found under 'future events' on our website.

Finally, I should like to invite readers to contribute articles or letters to the *Galton Review*. I want to re-instate a 'letters to the editor' section in future issues and should welcome any correspondence relating to our stated aims. Perhaps some of the matters raised in this issue will inspire you.

Robert Johnston

Evidence and Action for Reducing Sex-Selective Abortion in Nepal

July 2016

Principal Investigator: **Dr Melanie Channon**, University of Oxford

Co-Investigators: **Dr Mahesh Puri**, CREHPA, Nepal;

Dr Stuart Gietel-Batsen, University of Oxford

Introduction

Evidence that sex-selective abortions are occurring in Nepal has only recently become available and the issue had received little attention prior to this project.

Abortion was legalised in Nepal in 2002, followed by the introduction of comprehensive abortion care (CAC) centres in 2004 making access to abortion relatively easy. Prior to legalisation, unsafe abortion was the third largest cause of maternal mortality in the country. However, while legalising abortion has caused a reduction in maternal mortality, it may also have caused a substantial increase in sex-selective abortions. This has probably been further driven by falling fertility, which has intensified the desire to bear a son at a lower parity. This places policy-makers in a difficult position as the services provided to deliver good sexual and reproductive health (including ultrasonography and safe abortion services) are being misappropriated for sex-selection. The key question is how to safeguard these vital services, while reducing the incidence of sex-selection.

Previous research conducted by **Dr Melanie Channon** used survey data to study time trends in birth-order specific sex ratios. However, small sample sizes meant that this analysis could not estimate the size of the problem or the detailed variation in terms of geographic, demographic or socio-economic characteristics needed by policy makers. In order for there to be a reduction in sex-selection while still ensuring good reproductive and maternal health, greater evidence on the scale and determinants of the problem was needed. Furthermore, previous analyses failed to provide concrete policy recommendations

apart from the need to empower women which is of paramount importance in terms of reducing the demand for sex selection, but may not be achievable quickly enough to avoid a generation missing large numbers of women. Potential interventions to reduce sex-selection were therefore the focus of this research, though we fully recognize that the only long term solution is to remove the deep seated gender inequality inherent within Nepali society.

This project consisted of two distinct, but related sub-analyses – one quantitative and one qualitative – along with a dissemination phase. The generous grant allowed two trips to Nepal for **Dr Channon**, and one for the **Dr Gietel-Basten**. During these trips, qualitative interviews were conducted as well as meetings with DFID-Nepal, the Government of Nepal, and the local Nepali research team. Strong research links have been forged between the UK and Nepal, while substantial progress has been made in terms of both understanding and awareness of the nascent issue of sex-selection in Nepal.

Qualitative Analysis

The grant allowed us to carry out 22 interviews with key informants in the Kathmandu Valley during the period of March-July 2015; these interviews were somewhat delayed and disrupted by the Gorkha earthquake of 25 April 2015 and the subsequent aftershocks. The interviewees included policy makers, lawyers, journalists, and INGO/NGO staff in relevant areas. We were particularly interested in the process by which a woman might obtain information about the sex of her foetus, and then how she might procure a sex-selective abortion. We also asked about interventions or policies, which might effectively reduce the prevalence of sex-selective abortions.

Some of our findings were striking: awareness that sex-selective abortion might be a widespread phenomenon in Nepal (and especially Kathmandu, where the interviews took place) was very low. Some participants weren't aware that sex-selection was illegal, while those that were aware thought that enforcement was extremely weak. We also found that some practitioners were making substan-

tial amounts of money from disclosing the sex of a foetus and arranging sex-selective abortions. Another key point was the difference between public and private service providers, which was mentioned by participants many times; private providers are much harder to regulate and monitor effectively.

Possible interventions were identified. These included:

- Improved monitoring of sonography and abortion services, and enforcement of current law
- counselling of abortion seekers
- training of service providers
- incentive schemes
- media and advocacy campaigns
- long term attitudinal change and education.

The next step will be to test these interventions, as they are currently unproven both in Nepal and elsewhere.

A paper based upon the qualitative analysis was presented at The 3rd International Congress on Women's Health and Unsafe Abortion, held January 26-29, 2016, Bangkok, Thailand.

Quantitative Analysis

The grant allowed us to purchase parts of the Nepal Population Census micro-data which had not previously been used to look at skewed sex ratios and provided the scale of evidence that policy makers wanted to see on the extent and geographical distribution of sex-selective abortions in the country. The total number of sex-selective abortions in Nepal in the five years prior to the census was estimated at 22,540, which is equivalent to roughly 2% of births across the

country. Kathmandu and Bhaktapur districts were found to have more than 10% of girl births missing. Furthermore, it was estimated that 30% of sex-selective abortions in the country took place in the Kathmandu Valley. It was also found that there was no evidence of sex-selective abortions occurring in 36 of the 75 districts of Nepal. This shows the importance of geographically targeted interventions, and reflects the diversity of socio-demographics within the country. Furthermore, this will allow interventions to be tested and compared between different districts experiencing both similar and dissimilar levels of sex-selection. Initial results of both the qualitative and quantitative analyses are available in the form of a policy brief.

Dissemination

A half day results dissemination meeting was organized on 14 December, 2015 in Rato Baithak Hall at the Hotel Himalaya, Kupondole, Lalitpur, Nepal. This meeting joined forces with a complementary project on sex-selective abortions in Nepal, in order that we could gain maximum traction with interested parties.

The event was chaired by Family Health Division Director **Professor Dr. Pushpa Chaudhary**, Director, Family health Division, Ministry of Health and Population. It was the first meeting to be held in Nepal about the drivers of sex selection and the numbers of missing girls. Over 50 participants from concerned government and non-governmental organizations took part including UN agencies, bi/multi-lateral agencies, international non-governmental organization researchers, academicians and professional councils. In addition, representatives from district-level concerned governmental agencies such as District Development Office (DDC), District Education Office (DEO), District Women and Children Development Office (WCDO), District Police and District Public Health Office of two districts (Kaski and Tanahun), attended.

A policy brief outlining the findings of both the quantitative and qualitative analyses was given to all participants. This policy brief is available online at the following URL: http://www.ageing.ox.ac.uk/files/Policybrief_draft.pdf. A blog

post discussing the project and the dissemination meeting also accompanies this policy brief: <http://www.ageing.ox.ac.uk/blog/2016-Gender-Inequality-Nepal-BLOG>.

As part of her closing remarks **Dr Pushpa Chaudhary** made the following significant points:

She highlighted the evidence supplied as well as the excellent analysis conducted by Dr Channon. This provided the direct evidence that sex selective abortions are occurring in Nepal. CREHPA have been at the forefront of this and the evidence provided is of great use.

It is time to accept the fact that sex ratios are skewed in places and see the clear picture. We have to accept that this is not just illegal, but it is also immoral and unethical.

It was stressed that a full day workshop is needed to discuss the issue and to plan a roadmap to tackle the issue.

The research team are most grateful for the grant obtained from the **Birth Control Trust of the Galton Institute**.

Melanie Channon
University of Oxford

THE GALTON INSTITUTE ARTEMIS TRUST

An Artemis Trust grant is currently available. The maximum grant available in a year is £15,000 and the grant period is limited to 3 years. The grant will be awarded on a competitive basis and the deadline for receipt of completed applications is **1st June, 2017**. Applicants should consult the Galton Institute website at: <http://www.galtoninstitute.org.uk/grants/grants-from-the-birth-control-trust/>

**The European Human Behaviour and Evolution Association (EHBEA)
Conference
5-8 April 2016, in London**

EHBEA is a society that supports European research on evolutionary accounts of human cognition, behaviour and society. It organises annual European conferences and occasional workshops, which are committed to broad, pluralistic and interdisciplinary perspectives, bringing together researchers from human biology and genetics, behavioural ecology, anthropology, cultural evolution and evolutionary psychology. After ten years, the annual EHBEA conference returned to London, where the society has its origin. This year, the three-day conference was hosted by the London School of Hygiene and Tropical Medicine and the EHBEA London organisers would like to thank the **Galton Institute** for their generous support.

With over 230 delegates, half of whom were students, this year's conference was the largest to date. The conference consisted of 7 plenary lectures, and over 70 talks. Two poster sessions were dedicated to the nearly 90 posters that were presented. The full programme, as well as lists of all poster and talk abstracts, can be found on <http://ehbea.com/conference2016/program/>.

This year's plenary speakers were from a diversity of locations, and this diversity was mirrored in the content of their talks. Demographer **Ronald Lee** (University of California, Berkley US) spoke about his work on the importance of sociality and intergenerational transfers in demography. The plenary of anthropologist **Grazyna Jasienska** (Jagiellonian University, Poland) centered around the role of reproductive hormones in women's reproduction and health, and made the point that optimal levels of hormones for reproduction may come at a cost of health, and vice versa. Social scientist and child health researcher **Jonathan Wells** (University College London) convinced the audience of the importance of evolutionary processes in understanding public health. The ideas presented by plenaries **Lee**, **Jasienska**, and **Wells** were a good match with

some of the research done at the host institute London School of Hygiene & Tropical Medicine, and were complemented by several contributed sessions which focused on the application of evolutionary ideas to public health issues. All other plenaries were also evolutionary-minded, albeit from very different fields. Comparative primatologist **Louise Barrett** (University of Lethbridge, Canada) argued that we need a biosocial approach to understanding humans, and that we need to listen both to researchers on the more biological side of the sciences as well as those on the moral social side. Through an amazing series of videos, behavioural biologist **Jens Krause** (Humboldt University, Germany) showed the audience the herding behaviour of large groups of humans, which is not unlike that of flocking fish and birds. Bioarchaeologist **Jay Stock** (University of Cambridge, UK) took a more long-term perspective on human health in relation to major cultural transition drawing on the archaeological record. Winner of the of EHBEA New Investigator Award, **Olivier Morin** (Max Planck Institute for the Science of Human History, Germany), explained reasons for our species' stunning continuity and abundance of traditions, and argued that "Culture's what happens to you while you're busy making other plans". Plenary talks, and two excellent sets of photos of the conference, taken by LSHTM's photographer **Anne Koerber**, and EHBEA 2016's resident photographer **Vít Třebický**, can be viewed via <http://ehbea.com/conference2016/>.

Gert Stulp
University of Groningen

Human Evolution in Structured Populations Workshop
1-3 September 2016 at the University of Oxford

This workshop was generously funded by the **Galton Institute** and represented the first dedicated meeting set up to explore the archaeological, fossil and genetic data that suggest that the emergence of our species occurred within a set of subdivided populations located across Africa, rather than within a small and isolated East African population. The event therefore provided a platform for a renewed consideration of the complexity of our origins and the evaluation of com-

peting models within an interdisciplinary context invoking structured populations, which affect how the relevant data are interpreted.

The event commenced with a symposium open to the public featuring four speakers. **Professor Chris Stringer** (Natural History Museum, London) discussed the palaeoanthropological diversity of the African Middle and Late Pleistocene. **Professor Alison Brooks** (George Washington University) discussed the archaeological evidence for material culture diversity in the African Middle and Late Pleistocene. **Dr Lounes Chikhi** (University of Toulouse) talked about the genetic evidence of population structure in the early history of our species and **Professor Peter deMenocal** (Columbia) talked about the palaeoclimate diversity of the African Middle and Late Pleistocene. To increase the reach of the symposium, it was filmed as a podcast available online at <http://media.podcasts.ox.ac.uk/ouce/general/2016-09-01-ouce-anthro-scerri-720p.mp4>.

Over the next two days, 21 workshop delegates representing research leaders in archaeological science, population genetics, physical anthropology and palaeo-environmental research met to discuss four key themes: (1) the morphological and cultural diversity of Middle and Late Pleistocene human populations in Africa; (2) population size, density, growth and life history in the African Middle and Late Pleistocene; (3) intra African Dispersals; (4) research outputs.

Discussions, including smaller thematic break out sessions, led to the identification of a number of areas of research priority, which will, in the first instance, be published as a synthetic paper. Further, more detailed work was agreed upon as a future peer reviewed journal special issue with the same name as the event.

The HESP meeting provided an unprecedented opportunity to facilitate cross-disciplinary communication. The results of the meeting will help to re-evaluate major questions in human origins research and identify new, key areas of priority research across the major contributing disciplines.

Eleanor Scerri
University of Oxford

**Polish Society for Human and Evolution Studies (PTNCE) Conference
28-30 September 2016**

The Third PTNCE conference took place in Torun, Poland and was co-organised by the Centre for Language and Evolution Studies (CLES), Nicolaus Copernicus University and the Polish Society for Human and Evolution Studies (PTNCE). The conference brought together approximately 90 researchers from different countries including Poland, Czech Republic, UK, Germany and Japan. Their interests were related to the evolutionary perspective on biological, ecological, and human behaviour research. The conference covered many subjects, including anthropology, (biological and cultural), psychology, linguistics, sociology, archaeology and economics.

Robin Dunbar, in his presentation "*Time—the missing part of human evolution*", argued that it is 'time' that people were missing most in their evolution. He has shown how each stage in the story of human evolution really involved the need to solve a time budgeting crisis by finding novel ways to use time more effectively.

On the other hand, **Tamas Bereczkei** in his presentation "*Machiavellian Intelligence Hypothesis Revisited: What Evolved Cognitive and Social Skills May Underlie Human Manipulation*" argued that Machiavellian people have cognitive and social skills that enable them to efficiently exploit others. They have evolved specific algorithms – and underlying neural processes – that enable them to evaluate their social environment and make predictions about their future reward in a basically risky and unpredictable environment.

Finally, **Tomasz Grzybowski** in his presentation entitled "*Genetic portrait of Slavic—speaking populations of Europe*", elaborated on Y-chromosome and complete mitogenome sequences from three major language groups: western, eastern and southern Slavs. Using comparable data available from other populations of both Western and Eastern Eurasian ancestry, these results were

interpreted in light of the data on the formation of a Slavic identity emerging from other genetic studies.

The Polish Society for Human and Evolution Studies brings together scientists and students of various scientific disciplines interested in the application of the evolutionary perspective in the following research areas: biology, ecology, human behaviour and culture studies. By creating an idiosyncratic evolutionary platform we intend to break down the barriers between traditional divisions in human studies.

The series of conferences, which was initiated in 2014, aims at creating a multidisciplinary discussion forum gathering researchers from various disciplines pertaining to evolutionary approach to human biology, psychology, ecology, human culture, linguistics, economics and law studies. PTNCE are most grateful to the **Galton Institute** for its generous support.

Natalia Palka
Nicolaus Copernicus University, Torun, Poland

Galton Institute small grants for conferences and workshops

There are grants available of up to £1,000 to help meet the costs of running conferences or workshops on topics relevant to the Institute's aims. There are two deadlines for grant submissions, March 1st and September 1st. Details of the grants can be found on our website, <http://www.galtoninstitute.org.uk/grants/grants-for-conferences-or-workshops/> and the page links to our contact form.

Galton Institute postdoctoral travel grant

This travel grant of up to £6,000 p.a. (one per year) will be awarded to an outstanding postdoctoral researcher, normally within 6 years of receiving a doctoral degree, working in the field of genetics. Full details and application form can be found on our website at <http://www.galtoninstitute.org.uk/grants/galton-institute-postdoctoral-travel-grant/>.

'Why Malthus is Not a Social Hero' by John Erik Meyer

(A version of this article appeared previously
in *Humanist Perspectives* Issue 198)

Aristotle, Da Vinci, Darwin, and... Malthus?

Human societies have been shaped by surges in intellectual advances often spurred by single individuals. Some are revered and some are forgotten but Aristotle, Da Vinci and Darwin stand pretty much in a league of their own. The way humans think about themselves and their world through physics, philosophy, and social lenses was changed by these intellectual giants.

But there is one name yet to be added. Thomas Malthus dealt with difficult questions of human nature and his teachings have yet to be applied. Not so Aristotle, whose intellectual range was vast, covering most of the sciences and many of the arts. He was the founder of formal logic and his work remains a powerful current in contemporary philosophical debate.

Then there was Leonardo da Vinci, whose genius as a painter, draftsman, sculptor, architect, and engineer, perhaps more than that of any other figure, epitomized the Renaissance humanist ideal. His notebooks reveal a spirit of scientific inquiry and a mechanical inventiveness that were centuries ahead of their time. Charles Darwin was a naturalist whose scientific theory of evolution by natural selection became the foundation of modern evolutionary studies. The new evolutionary narrative rapidly spread through all of science, literature, and politics and profoundly changed the way humans viewed themselves and the world around them.

In contrast to these timeless greats, Thomas Malthus is now little more than an arcane historical footnote, not widely studied yet regularly panned by the economic establishment. However, Darwin and many scientists found inspiration in Malthus' writings even as they were spurned by the commercial world. Whereas

Darwin, da Vinci and Aristotle opened our minds to a world of wonder, of progressive change for all, Malthus held forth a view which presented difficult choices and these difficult choices required significant sacrifices by the powers of the day.

Malthus laid out the principal causes of societies' failure down through the ages, an immeasurably valuable revelation of cause and effect. Malthus was an observer of history and was the first to try to explain past events in history through the application of logic and mathematics. Yet he has been ignored and even ridiculed by commercial and political elites who rightly saw his concepts as direct threats to their own prosperity and power.

He noted:

- the inevitability of repeated social collapse given the human tendency to reproduce,
- the surges in population and collapses of societies through history,
- the very high rates of population growth in new lands,
- the impossibility of sustaining high rates of growth,
- the inequality in industrial development and social structure,
- the food inefficiency of meat production.

Malthus called for an end to growth, higher real wages, reductions in inequality and an economic focus on providing material sustenance for the poor rather than luxury goods for the rich. In effect, he proposed more wealth and power to the middle class and a reduction in poverty, all while removing a good part of the means of wealth accumulation for the rich (cheap labour and asset inflation).

The nobility of late 18th century England were no more open to hearing Malthus' proposals than today's bankers, media corporations, developers and cheap labour employers are of hearing about sustainability, a broad-based economy or the re-writing of globalism with new humanist-based goals. Hence, the attacks from every point of the elite compass to halt the spread of this kind of conversation.

This is a huge loss for humanity because the intelligence that Malthus contributed to public discussion was different in nature from those of the other three icons.

Instead of lifting humanity up to new heights of moral or technical understanding, Malthus illuminated what it would take for human societies to endure. By analyzing the reasons for the repeated failure of civilizations, Malthus opened the door to finding the path not previously travelled, the one which circumvents population cycles and reveals the mechanism of sustainability.

Where Aristotle clarified thinking on philosophy and advanced many forms of science through the process of logic, Da Vinci inspired that world of science and the love of form, and Darwin utterly transformed our understanding of geological and biological time and processes, Malthus showed the key flaws in humanity's attempt to build permanent progress and social stability.

Humanity does not lack for technological cleverness or the drive to improve or to learn about the world around us. What humanity lacks is an understanding of why our societies repeatedly fail and what changes we must make to assure that we can cross the threshold to both stability and progress.

The other greats gave society the ability to make great strides forward. Malthus, if applied, would allow our societies to stop sliding back repeatedly. If the teachings / research / findings / conclusions of Malthus had been followed, allowing humanity to avoid the wars, famines, plagues and societal upheavals that are part and parcel of every population cycle, it would have marked the greatest advance in human history since the development of agriculture and the formation of towns: a way for towns and higher-order societies to progress steadily without collapse. It would make eternal progress possible rather than dooming society to inevitable failure with the impossible pursuit of eternal growth.

Although completely mainstream today, the findings of Darwin were a direct contradiction of core religious teachings and thus initially ran into huge criticism from many quarters. On the other hand, Malthus' suggestions advocated a fundamental change in social priorities, wealth creation and distribution. It was a direct attack on the wealthy, their pocket-books, their pride and their power. Hence, his proposals were much more of a challenge to the social order from which elites

have profited throughout time than even Darwin's *On the Origin of Species* was to the Church of the day.

Yes, Malthus will repeatedly be held out as a failed prophet by the growth-addicted elites. But they will always fail to mention the accuracy of his historical observations, the undeniability of his mathematics and the fact that simply because our modern society has not collapsed does not mean that we are not in a cycle.

Malthus looked at regional and national population cycles to the limit of the data available to him over 200 years ago. Today, we are in a global cycle composed of many smaller interlocked national cycles. However, the data we have available to us now stretches back thousands of years with detail and extent that Malthus could never have dreamed of. All of this supports his contentions and should give us cause, along with the micro-fracturing appearing in most countries, to embrace his cautions and deal with the issues of population and consumption in ways that have simply never been possible before in human history.

If we can do that, then Malthus may yet be elevated to his rightful place beside the illustrious greats of humankind.

* * *

Some relevant quotations from Malthus in the flowery prose of the period:

Equality

"In the same manner, although we cannot possibly expect to exclude riches and poverty from society; yet if we could find out a mode of government by which the numbers in the extreme regions would be lessened and the numbers in the middle regions increased, it would undoubtedly be our duty to adopt it."

Understand what is, don't long for what should be

"The moment we allow ourselves to ask why some things are not otherwise, instead of endeavouring to account for them as they are, we shall never know

where to stop; we shall be led into the grossest and most childish absurdities; all progress in the knowledge of the ways of Providence must necessarily be at an end; and the study will cease to be an improving exercise of the human mind." (Dogma replaces critical thought.)

Reluctance to Migrate

"We know well from repeated experience, how much misery and hardship men will undergo in their own country, before they can determine to desert it; and how often the most tempting proposals of embarking for new settlements have been rejected by people who appeared to be almost starving."

History of Population Cycles

"If the proposition between the natural increase of population and food which I have given be in any degree near the truth, it will appear, on the contrary, that the period when the number of men surpass their means of subsistence has long since arrived; and that this oscillation, this constantly subsisting cause of periodical misery, has existed ever since we have had any histories of mankind, does exist at present, and will forever continue to exist, unless some decided change takes place in the physical constitution of our nature."

Extreme Growth Rates in new American Colonies

"Throughout all the northern colonies, the population was found to double itself in 25 years. The original number of persons who settled in the four provinces of New England in 1643 was 21,200. Afterwards it was supposed that more left them than went to them. In 1760, they were increased to half a million. They had therefore all along doubled their own number in 25 years. In New Jersey the period of doubling appeared to be 22 years and in Rhode Island still less. In the back settlements, where inhabitants applied themselves strictly to agriculture and luxury was not known, they were found to double their own number in 15 years, a most extraordinary instance of increase."

Exponential growth

"Taking the population of the world at any number, a thousand millions, for in-

stance, the human species would increase in the ratio of 1, 2, 4, 8, 16, 32, 64, 128, 256, 512 etc and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 etc. In two centuries and a quarter, the population would be to the means of subsistence as 512 to 10, in 3 centuries, 4096 to 13 and in two thousand years, the difference would be almost incalculable, though the produce in that time would have increased to an immense extent."

Cause of Migration

"A great migration necessarily implies unhappiness of some kind or other in the country that is deserted. For few persons will leave their families, connections, friends and native land, to seek settlement in untried foreign climes, without some strong subsisting cause of uneasiness where they are, or without the hope of some great advantages in the place to which they are going."

Dedication:

Malthus would probably have enjoyed conversation with Bert McInnis of Ottawa, Canada, and David MacKay of the UK who have both recently passed away. Bert was a co-founder of WhatIf Technologies and applied his expertise spanning mathematics, philosophy, engineering, general system theory and physical and social sciences to the design and implementation of systems models primarily for the exploration of specific problems involving human agency. David brought his mind to bear on many questions including energy conservation and realities of conversion to renewable energy. To make his points clear he published "Sustainable Energy without the hot air" on the website: www.WithoutHotAir.com for free download and also made his famous TED talk video on the subject.

Upon their passing, the path trod by the brilliant becomes quickly overgrown.

John Erik Meyer
President of Canadians for a Sustainable Society

THE GALTON INSTITUTE

Conferences 2017

Surveying Galton's Legacy

Wednesday 15 November, 2017

To be held at

The Royal Society
6-9 Carlton House Terrace
London, SW1Y 5AG

Advances in Genetics: a second teachers' conference

Wednesday, 28 June, 2017

To be held at the
Nowgen Centre
29 Grafton Street
Manchester M13 9WU

This is a genetics up-date for A-Level biology teachers

Admission to both conferences is free, but strictly by ticket available from:

The General Secretary at: executiveoffice@galtoninstitute.org.uk