

Abortion: the scientific Truth

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Díonbhrollach

Ní ghlacann an páipéar seo seasamh creidimh (.i. morálta) nó eiticiúil maidir le gínmhilleadh. Tá dlíthe air sin fá chúram an Oireachtais. Do b'é an mearbhall intinne maidir le gínmhilleadh a cuireadh ar daoine - ó Bhinse na mBreithiúna is ó ghníomhaigh - a spreag an obair seo. Ciacu easlán an linbh sa bhroinn, nó nach ndearnadh é a ghiniúint le toil a mháthair, nó go simplí nach bhfuil sé ag teastáil, is ionann deireadh a chur lena shaol, go bunúsach, agus deireadh a chur le saol éinne. Ag cur síos dúinn ar deireadh a chur le saol duine, i slí is go mbeadh an scéal so-ghlactha, d'fhéadfadh ár n-ionracas a bheith i gceist. Más mian le sochaí 'damáiste comhthaobhach' do dhéanamh, i mbardaí mháithreachais, nach fearrde bheith macánta faoi?

I 350 RC, ag scríobh ar Mheitifisic dó, dúirt Arastatail go mbíonn an Duine i gcónaí ar thóir an eolais. Na laethe seo, ámh, bíonn tuairim dhaingean go minic ag duine, a ghlacann sé mar 'eolas'. Cibé toradh a bheas ar oibir an Tionól Saoránach, ba mhian linn go léireodh sé machnamh domhain ar an bhfaisnéis a gcuirtear fána bhráid - is neamhchlaontacht. Bheimis sásta leoga, dá mba mhian le héinne dul i gcomhairle linn maidir lena a bhfuil scríobhtha annseo. <http://www.dictionary.com/browse/conviction>; https://www.jstor.org/stable/22499?seq=1#page_scan_tab_contents

There are none so blind as those who will not see.

John Heywood, 1546

Scientific information on abortion scarcely features in secular discussions on this. If we do not consider the issues in an open-minded, informed fashion, we shall not reach sustainable conclusions.

Psychological Predispositions can conflict our thoughts. The English Houses of Parliament produced a note (October, 2015) on how Bias affects witness testimony in Court. The text reads:

"...it is important to avoid the fallacy of supposing that, because a witness has confidence in his or her recollection and is honest, evidence based on that recollection provides any reliable guide to the truth"
<https://civillitigationbrief.wordpress.com/2015/10/26/bias-in-court-and-witness-evidence-houses-of-parliament-note-credibility-and-witnesses-in-the-civil-courts/>

Recall Bias will tend to colour a witness's account, eg of a crime. A Bias will tend to affect how a person's mind processes any complex issue, including abortion, and thus leave little or no scope for clear and robust analysis.

Current pro-abortion rhetoric is seen to be invalid when examined with 'Scientific Method' - which is not confined to the Natural Sciences. This analytical tool balances reason and the senses and, using induction and deduction (ie the logical process) and reliable information, combats predisposition. The UK's Royal Society first met in 1660, including amongst its distinguished members the Irishman Robert Boyle, of Lismore. The motto of their 'invisible college' was: '**Nullius in Verba**' or "Take nobody's word for it" - encapsulating the meaning of Scientific Method and the true spirit of enquiry.

[The cover note (14/12/2016 – a shorter draft) to the Citizens' Assembly, which is considering Abortion Law in Ireland: The secular value given to human life and when this value should confer protection, is a topic given no real attention, in current exchanges on abortion. Secular value depends upon scientific understanding. Such understanding must be clear, when State laws are considered – because such laws can be challenged on the basis of natural truths.]

Clár Ábhair

A Human Life is threatened from the very Start – Outcome Bias can underlie the Law.	p.3
B Predisposition can be stronger than Reason.	p.5
C The Start of Life – Legislators avoid this.	
-i] Abortion Laws lacking Logic.	p.6
-ii] Motivations to terminate.	p.7
D Must a Foetus be ‘self-aware’ and ‘morally relevant’ to escape Termination? Are all Adults ‘self-aware’ and ‘morally relevant’?	
-i] Legal Constructs for Terminations could cover Adults.	p.8
-ii] Individuals have a substantive, in-built psychological Kit, from the Point of Conception.	p.8
-iii] Legal Constructs are too easily broadened.	p.10
E Can ‘potential Persons’ be terminated? Not if such do not exist...	
-a] Other Species’ Life Stages – for Comparison.	p.11
-b] The Start of Life – actually not Rocket Science.	p.12
F A ‘Clump of Cells’? – not really... not at all.	
-i] Just a few Cells – the greatest Misnomer ever.	p.14
-ii] The Kingdom Protista.	p.15
-iii] Embryos: complex little Individuals.	p.16
G “I can do what I want with my Body.”	
-i] The Development of the human Body.	p.19
-ii] An early Embryo can live separately from a Mother: foetal Autonomy.	p.19
-iii] A late Embryo could live separately from a Mother: foetal Autonomy.	p.20
-iv] Other Refuges for unwanted Babies.	p.20
-v] Legislators and Courts advance societal Expectations and reject scientific (physical) Truth.	p.21
H A Mother’s Life and Health – and Abortion helps this?	
-i] A Canard which Administrations think gives them an ‘Air of Decency’.	p.22
-ii] Governments do not have Empathy.	p.22
I A grievously ill Conceptus - and a grievously ill Adult.	p.23
J Why Dehumanising eases Killing.	p.24
K Examples of ‘judicial Killing’. The Abortionists’ Patch.	p.27

Addenda sunt. The Necessity of Afterthought

- I) **The Beauty of Nature: Painted Ladies.** p.29
- II) **How infinite is the Big Picture – microscopically and galactically?**
Universal Harmony places the Measure of human Worth and Dignity in
Nature's Equations. How is Worth and Dignity obtained? p.29
- α) **Genetic Determinism is invalid. Having Dignity and Worth**
requires Free Will. p.29
 -i] DNA – -ii] Epigenetics – -iii] the Microbiome – -iv] Reward Pathways etc.
- β) **'Free Will' - for 300,000 years, affording Worth and Dignity.** p.32
- γ) **Reason in scientific Discovery. The Infinite-dimensional Reality.** p.37



A Human Life is threatened from the very Start – Outcome Bias can underlie the Law.

A scientific look at the 'Protection of Life during Pregnancy Act, 2013' – the Irish abortion legislation – is required. In this regard, two basic questions remain to be answered:

- i) **is a full human being present at all stages of life** {the zygote (fertilized egg), blastocyst, embryo (usu. from 3-9 weeks), foetus (usu. 9 weeks to birth)?
- ii) **is the secular value of protecting lives robust ?**

In the following sections, we shall see how, with scientific clarity, a full human being is present at all stages of life. **Are there times when the secular value given to human life can be dispensed with? Outcome Bias** can lead Legislators to judge their decisions by the eventual outcomes of these, rather than by the quality of information which fed into their decision in the first place.

Definitions of the word 'abortion' use terminology cast to favour particular views, eg 'i) the act of giving untimely birth to offspring, ii) premature delivery, iii) miscarriage; iv) the procuring of premature delivery so as to destroy offspring' (on-line Oxford). The US National Right to Life Committee defines abortion as 'any premature expulsion of a human foetus, whether i) naturally spontaneous, as in a miscarriage, or ii) artificially induced, as in a surgical or chemical abortion'. The US National Abortion Federation says: "A medical abortion is one which is brought about by taking medications that will end a pregnancy. The alternative is surgical abortion, which ends a pregnancy by emptying the uterus (or womb) with special instruments."

<http://www.nyu.edu/classes/jackson/social.issues/papers/AbortGrf.html>

Women may find themselves pregnant and emotionally, socially and financially unprepared. They may come to terms with their position on the basic questions in different ways. They may seek purpose from the coming uncritical attachment of their child or they may otherwise dehumanize the new life they carry. Under frightening, unbearable pressures, rationalising their position either way with clarity may be too onerous. Exceptional stress will arise as a result eg of the commission of rape or incest. Even in the protective environment of the womb, a mother's level of stress (relayed by maternal cortisol levels) affects the developing foetus. Negative impacts on her child's ultimate behavioural and physical health can be

permanent. In the absence of emotional and technical support, the path to abortion may effectively become unavoidable. A woman in crisis pregnancy should never feel alone or abandoned.

<http://www.urbanchildinstitute.org/articles/editorials/stress-has-lasting-effect-on-childs-development>

Very few (c5%) American women, whatever stress they have gone through, regret terminating their pregnancies, in a study which does not refer to babies. If the foetus is a full human, pregnant women should be cared for appropriately, so that abortions (if decided upon) do not occur as a matter of standard procedure. Mothers should be counselled in a positive manner. A, B and C in the 2010 Judgement, on Application no. 25579/05 to the European Court of Human Rights, would have **benefited enormously from a little kindness** (paras 13-26 thereof).

<http://time.com/3956781/women-abortion-regret-reproductive-health/>

Abortion apologists argue that a fertilized egg may be ‘treated’ or ‘terminated’, which is (technically) **Propaganda**¹. The act of killing a child is masked by a multitude of phrases: “I want **the right to choose** [choosing what is never said]” or “I work for **Women’s Rights**”. “I can do as I want with my body” or “**a few cells** are not a person”. Ideas, which denigrate the conceptus, may uncritically become embedded in society. The Unborn may, superficially, not be seen as fully human – or, indeed, all thoughts of this may be set aside. The recently born, the aged or critically ill are other individuals which variously face a threat.

<http://barbwire.com/2016/04/19/killing-old-sick-people-canada-commences-america-considers/>; <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3070710/>; <http://jme.bmj.com/content/39/5/261.full.pdf+html>; <https://www.youtube.com/watch?v=gON-8PP6zgQ>; <http://www.cnsnews.com/news/article/some-college-students-approve-after-birth-abortion-age-5>; <https://www.youtube.com/watch?v=qEv1afKaLhA&app=desktop>; <http://www.wnd.com/2013/03/planned-parenthood-lobbies-for-post-birth-abortion/>; <http://www.telegraph.co.uk/news/health/news/9385674/Hospitals-letting-patients-die-to-save-money.html>

The differing values given to early human life, eg based on common perceptions and legal judgements, need non-partisan elaboration. Referring to scientific and neuroscientific research, this paper evaluates phrases and judgements, which support abortion. The most difficult task, scientifically, is not to show that **a full human is present at all stages of life** but to counter the fact that “we see what we want to see”. Because of the around **200 Cognitive Biases** which affect our thinking (analogous technical terms are **Prejudices, Expectations, Comfort Zones, Group-think, Hive Mind, Rush to Judgement, Anchoring and Hindsight Biases**), Scientific Method, or other tools of disambiguation, need to be used. Biases are pervasive thinking habits, which result from the speeding up (and simplifying) of information processing. They threaten objectivity and cause flawed reasoning. <http://www.newyorker.com/news/news-desk/the-mistrust-of-science>

Cornell Physicist **Richard P. Feynman** is stark: "Smart people (like smart lawyers) can come up with very good explanations for mistaken points of view." Authentic, evidence-based practices in law appear few and far between. **Peter van Inwagen** (Notre Dame University, Indiana) gives a warning (New Scientist of 1 April, 2017) – to think critically, assess the track record and potential Bias of the sources of information used... and ask whether your reaction to new knowledge is based on something trustworthy or not (ie please use Scientific Method). <http://bauersteven.blogspot.ie/2010/06/promoting-practice-as-evidenced-based.html>

On April 22nd, 2017, the Earth Day Network (EDN) launched a three-year campaign for environmental and climate literacy. Scientists and supporters around the world marched to demand that **scientific truths** be recognised, as regards Climate Change and indeed **across all disciplines**. States and courts do not have, **nor** apparently want, the scientific tools to locate truths of fact. One line of **Spin** can, in effect, upend a beautiful truth of Nature. **Truth is commonly sidelined**. Truth has, however, to be defended.

<http://www.earthday.org/2017/02/20/earth-day-network-launches-three-year-campaign-environmental-climate-literacy-earth-day-2017/>
<http://gulffnews.com/opinion/thinkers/environmental-and-climate-literacy-is-the-key-to-sustainable-future-1.2015609>

B Predisposition can be stronger than Reason.

The astrophysicist and author, **Fred Hoyle**, in his book, ‘Ossian’s Ride’ - written in his commanding, literary style - contains a life’s store of wisdom. In the twelfth chapter, on an island off Kerry called

¹ A word from neuroscientific literature for a welter of information from trusted sources.

Inis Mhic Aoibhleáin, the leading character speaks about topology (the mathematics of the properties of geometric forms unaltered by elastic deformations). He says: “In science and mathematics, it doesn’t matter who speaks, only what is said.” Were this so in other fields – often dominated by low-class agendas (ie ones not carefully thought through).

On the findings of the UN panel in the **Julian Assange** case, Britain’s then Foreign Secretary, Philip Hammond, said (amongst other things) that the panel members were not qualified. His view, more anchored in his own pre-eminence than fact, prevailed in England.

<http://www.washingtontimes.com/news/2016/nov/30/un-panel-upholds-decision-julian-assanges-detainme/>

Manila contested China's claim to 90% of the South China Sea. At the UN, there were both arguments and concerns over military confrontation [ie ultimately might is right]. **Hong Lei**, the Chinese Foreign Ministry spokesman, said the UN Arbitration Court had no jurisdiction in the case. He added that China does not accept any dispute resolution from a third party, regarding territory or maritime delineation.

<http://www.bbc.com/news/world-asia-36767252>

Amnesty International says the overwhelming ‘majority of our income’ comes from individuals the world over and that it does not ‘accept any funds for human rights research from governments or political parties’. It has, however, received governmental funding, including from the UK Department for International Development, the European Commission, the Netherlands, the United States and Norway. The 2014 income of the Amnesty International Secretariat was said to be £61,743,000.

<https://www.amnesty.ie/amnesty-international-welcomes-irish-governments-compensation-mellet-case/>

<https://www.rte.ie/news/2016/1130/835621-united-nations-abortion-amanda-mellet/>

In the 1980s, a Taoiseach (a Prime Minister) of Ireland, **Garret Fitzgerald**, is said to have asked – with some despondency: “what has logic got to do with politics?” He was, in effect, acknowledging that people’s judgements are often riddled with errors, influenced by Biases.

In a CNN clip, on the 28th of March, 2017, Newton Leroy ‘**Newt**’ **Gingrich**, a politician from Georgia and formerly the 50th Speaker of the United States House of Representatives, noted that sometimes the people’s feelings may not be in line with the facts. For his part, he said, he would side with the people. This considered position, from an intellectual of his stature, requires a second and a third examination. [But first, please read his book ‘Big Babies’.]

The establishment of scientific truths, concerning abortion laws and rhetoric, will require a substantive effort against powerful interests, which do not accord a secular value to people at all stages of their lives. The line of least resistance, as regards the status of an unseen, unwanted and undefended person, is to accept the sweeping denigration of him/her. However, the unceasing welter of abuse thus delivered, can be shown to be an unsupported, even unseemly justification **for our own kind to be done to death**. Sometimes Biases are obvious – eg as with **Predispositions**. Others may be so subtle that **Self-deception** is impossible to notice.

<http://philosophy.hku.hk/think/fallacy/biases.php>; <https://www.verywell.com/psychology-glossary-4014425>

<http://bauersteven.blogspot.ie/2010/06/promoting-practice-as-evidenced-based.html>

The Oxford Dictionaries’ Word of the Year 2016 is **post-truth** – an adjective defined as ‘relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief’. **States should ensure that the normally robust secular value, of protecting lives, remains clearly respected.**

<http://www.reuters.com/article/us-china-philippines-court-idUSKCN0ZG05S>

<http://www.ngo-monitor.org/ngos/amnesty-international/>; <http://www.jonathan-cook.net/blog/2016-02-08/why-the-assange-ruling-is-not-ridiculous/>

<http://www.theguardian.com/media/2016/feb/05/julian-assange-accuses-philip-hammond-insulting-united-nations>

<https://en.oxforddictionaries.com/word-of-the-year/word-of-the-year-2016>; <http://www.ngo-monitor.org/ngos/amnesty-international/>

The heart-breaking sight of the dead three-year old Syrian Kurdish boy, called Alan Kurdi, on a beach near the Turkish town of Bodrum, stirred the world. The drowning by September of that year (2015), of another 2,600 refugees, sadly, did not. Understanding how impressions and opinions can form, whilst relevant issues are kept out of sight, is revealing. <https://www.ncbi.nlm.nih.gov/books/NBK9906/>; <https://www.britannica.com/science/cell-biology/The-process->

of-differentiation ; [http://www.exphem.org/article/S0301-472X\(03\)00050-X/abstract?cc=y](http://www.exphem.org/article/S0301-472X(03)00050-X/abstract?cc=y) ; <http://learn.genetics.utah.edu/content/cells/insidestory/>
<http://www.cerebromente.org.br/n12/fundamentos/neurotransmissores/neurotransmitters2.html>

C The Start of Life – Legislators avoid this.

-i) Abortion Laws lacking Logic.

Natural Law theory comprises three schools: Divine Natural Law, Historical Natural Law and Secular Natural Law. This last, used here, represents the system of principles derived from the physical, biological, and behavioural laws of Nature, as perceived by the human intellect and elaborated through reason, best exercised using Scientific Method. **The Fifth and Fourteenth Amendments to the American Constitution** prohibit the taking of ‘life, liberty, or property without due process of law’. There are principled implications here for the administration of Natural Law justice, if protection properly extend to the conceptus.

<http://www.nlm.nih.gov/medlineplus/ency/article/002398.htm> ; <http://legal-dictionary.thefreedictionary.com/natural+law>
<http://classes.midlandstech.edu/carterp/Courses/bio211/chap28/chap28.htm>

Judgements from the 1992 Supreme Court X Case and the European Court of Human Rights A, B and C Case. Judge O’Flaherty, a presiding judge at the X Case (March 1992), questioned the relevance of that case for providing for abortion, as in The Protection of Life During Pregnancy Act, 2013. Suicidal ideation was the argument used in the X Case for procuring the right to abort. Suicide in pregnancy, however, may be as rare as 1 in 500,000 cases (Irish Joint Committee on Health and Children, January 2013). The judge suggested that the 1983 Constitutional Amendment, on the equal right to life of the mother and the unborn, be addressed, not X. The fourteen-year old Miss X had a miscarriage, in the event, not an abortion.

http://www.oireachtas.ie/parliament/media/Volume_1_142239.pdf ; <http://www.thejournal.ie/twenty-years-on-a-timeline-of-the-x-case-347359-Feb2012/>
<http://www.irishtimes.com/opinion/supreme-court-x-case-ruling-not-good-basis-for-abortion-law-1.447542>
<http://www.irishtimes.com/news/social-affairs/x-case-judge-says-ruling-is-moot-in-current-abortion-debate-1.1454699> ;

The A, B and C Judgement noted (paras 243, 268, 279) the absence in Ireland of procedures for determining a woman’s right to abortion. The European Court should have known that the X Case (39, 253-4) provided a poor basis for providing abortion rights. And that the Supreme Court had neither heard nor sought expert psychiatric evidence. <http://health.gov.ie/blog/press-release/government-press-statement-re-judgment-of-the-european-court-of-human-rights-delivered-this-morning-in-the-case-of-a-b-and-c-v-ireland/> ; http://www.oireachtas.ie/parliament/media/Volume_1_142239.pdf ;

Ignoring a child’s existence, the Court (para 109.7) noted that abortion was available ‘upon request’ (subject to certain limits) in 30 Contracting States (para 112), saying -i) that (172, 223, 235) it had **not been asked to decide when life began**, a matter of permanent disagreement (between Courts, Scientists, States [and Old Uncle Tom Cobley and all]) and -ii) that it was not necessary to look beyond international trends and views (unsubstantiated). The 1973 Roe v. Wade judgement (35) did not deal either with when life begins.

The European Court, referencing Irish ‘profound moral [religious] and ethical values’ (eg paras 185-6, 230) and inadequacy in Irish laws (97, 253, 256, 258, 265), found that there had been a violation of C’s right to private and family life contrary to Article 8 of the European Convention for the Protection of Human Rights and Fundamental Freedoms. http://health.gov.ie/wp-content/uploads/2014/03/Judgment_ABC.pdf

Overall, the Court unanimously declared admissible (284) the complaints of A, B and C about abortion law in Ireland under Articles 8, 13 and 14 of the European Convention on Human Rights. The Court said the extent of the prohibition on abortion in Ireland stood in stark contrast with more flexible régimes for which there was European and international consensus. Case law had previously found a reliance on consensus to be instructive, in considering the scope of Convention rights (174). Judge O’Flaherty had made a valid point. And the European Court is no place for a State needlessly to be criticised.

‘**Secular morality**’ (para 185) was **a term invented by the Court** for its own purposes {the Irish Government distinguished between ethics and morality (para 188)}. In this long, meandering document the Court, whilst briefly referencing moral values (which the Court did not understand), in fact **avoided reference to the secular argument against abortion** (para 228).

The Court was repeatedly swayed by the common **Expectation** of a right to abortion (a term with no connection to evidence, used in psychology and neuroscience to define a type of **Bias**). It is hard to deny that the Court **side-stepped substantive issues, whilst side-swiping at religious values**. An issue lies in the inexcusable disregard both of scientific information readily available and of its reasoned use.

<http://www.nature.com/nrn/journal/v15/n11/abs/nrn3838.html> <http://liveactionnews.org/studies-show-risk-of-suicide-elevated-in-women-after-abortion/>

Research (Gissler, Fergusson) shows no benefit to pregnant women from abortion. On the contrary, the work concludes that, after abortion, damaging outcomes are recorded for women. Pregnancy is not listed, in over twenty reasons given for 'suicidal ideation'. The 2013 Act does not indicate prior contemplation by legislators of factual information - but rather acceptance of unfactual European Court assumptions.

<http://www.irishexaminer.com/analysis/pro-life-a-respectful-debate-needed-on-abortion-215257.html> ; <http://www.medicalnewstoday.com/articles/193026.php> ; <http://www.jfponline.com/pages.asp?AID=8631> ;

Irish legislators could quite properly have provided support for women in crisis and a legal standing for the safe medical practice followed before the enactment of the 'Protection of Life during Pregnancy Act, 2013'. An incorrect Irish Court decision (regarding suicidal ideation) allows for the direct killing of the Unborn, with no time-limit, in the face of much expert medical evidence on the subject. The unchallenged, extraordinary enhancement in law of suicidal ideation may be balanced against the **poor mental health** services in Ireland.

Professor Brian Cox, whose research is quoted later on, speaks about the Arrow of Time. A natural occurrence has a beginning, a middle and an end. Men will do well not to pretend there are stages in the Flight of the Arrow which they can interrupt life to suit themselves. **Nature does not see Man's purpose.**

<http://www.bbc.co.uk/programmes/p00wv834>

-ii] Motivations to terminate.

The initial motivation to have an abortion is best seen where this is fairly freely available. In the US, where this is so, the motivation is diverse, with interrelated reasons, set against high-sounding but leaky laws. Young women often report being unprepared for a child. Older women cite a responsibility for dependents. Resource limitations and responsibilities are the most common grounds for abortion: **i)** having a child would interfere with education, work or caring for dependents (74%); **ii)** {related to **i)**} funds were not available (73%); **iii)** not having a partner's support or being a single mother was undesirable (48%). Nearly 40% said they had completed their childbearing and almost one-third were not ready to have a child. Fewer than 1% said their parents' or partners' wish for them to have an abortion was the most important reason.

<https://www.guttmacher.org/pubs/journals/3711005.html> ; <https://www.guttmacher.org/pubs/gpr/09/3/gpr090308.html>

Jurists and legislators, who espouse Ethical Relativism (ie no absolute ethical code exists), may adopt a position, from which they weigh the right to life in a quasi-legal balance. There are scientific truths which fall to be considered, however, if the legal process here is to build a reputation of being free from **psychological Biases**. In the Kingdom Animalia, there is a natural model of progression for life, which will be explained. To excuse abortion, Nature has to be disregarded when the start of life is variously given arbitrary, made-up definitions (eg related to unverifiable nervous development). The slogan '**abortion as soon as possible but as late as necessary**', however, takes no lore at all into consideration.

<http://www.irishhealth.com/article.html?id=13206>

D Must a Foetus be 'self-aware' and 'morally relevant' to escape Termination? Are all Adults 'self-aware' and 'morally relevant'?

Surviving birth does not mean an unfettered pathway to adulthood. "Every five minutes, a child is killed by violence. For too long, the World has tolerated this epidemic of violence, which disfigures societies..."

<http://nymag.com/scienceofus/2015/10/this-new-pbs-miniseries-will-expand-your-mind.html>

-i] Legal Constructs for Terminations could cover Adults.

Stress, with an unwanted conception, should be balanced against the right to life of a new individual. It is unsustainable, by definition, to say that a full person is only somebody who has attributes specially chosen

so as to exclude a target group.

It is argued that the lack of **self-awareness** (a sense of self) is a ground for abortion. Adults, however, could lose self-awareness by undergoing surgery or as a result of participation in a boxing match. To require a potential for self-awareness does not provide a way out either: both an ill adult and infant have this. The immediate exercisable capacity for self-awareness is yet another abortionist idea. The newborn cannot arguably exercise this capacity but the adult can, eg simply by waking up. This argument also falls, however, because the adult could fall into a coma. To possess neural architecture, enabling self-awareness, is yet another argument. A comatose adult normally retains the capacity for self-awareness – greater than the Unborn's potential for this. However, an adult's functional neural hardware could variously be permanently upset. **The abortion criterion of self-awareness (however presented) is undermined:** the infant has a rational nature.

https://books.google.ie/books?id=Imm2BQAAQBAJ&pg=PA31&lpg=PA31&dq=%27selfawareness%E2%80%99+abortion&source=bl&ots=LF5juL0h9o&sig=9Q5xCfi-WnbBfm9IOtXg2bYnAc&hl=ga&sa=X&ved=0ahUKewiK5Zzx5N_NAhVgGsAKHdr4BGMQ6AEITDAH#v=onepage&q='self-awareness%E2%80%99%20abortion&f=false

From another angle, it is argued that a foetus is **not morally relevant** (another made-up term - ie cannot argue about right and wrong). With irresolvable or disabling conditions, however, adults are not said to be less human.

- Syncope (loss of consciousness - an Episodic Neurological Symptom) can intermittently recur.
- Lewy Body Dementia is notable for its early up-and-down swings. Patients may act normally one day (be morally relevant) but exhibit dramatic reversals the next (morally irrelevant).

<https://www.sciencedaily.com/releases/2016/09/160920130836.htm> ; <http://www.todaysgeriatricmedicine.com/archive/011613p12.shtml> ; http://www.encyclopedia.com/topic/Chronic_Illness.aspx

If a grown person lose '**moral relevance**', secular values will still not too readily permit his/her dispatch. Equally if an infant, moving forward in life, be developing a sense of what is moral, there is no case, except that of adult expedience, for moving in to cut that process short. The currently prevailing legal theory (the 1967 English Abortion Act) on human development is that human beings start their lives in a 'blank moral state'. However, researchers have now found that babies as young as six months old already make moral judgments: this indicates that we are born with a moral code hard-wired into our brains.

<http://www.ncbi.nlm.nih.gov/books/NBK374/>; <http://phys.org/news/2010-05-psychologists-babies-wrong-months.html> ; <https://www.ncbi.nlm.nih.gov/pubmed/16681121>

In the past twenty-five years, indeed, the new field of **Prenatal Psychology** has developed. Having confidence and honesty, in abortion discourse, does not equate with accuracy. A foetus can sense anger and stress. Mothers who resent being pregnant are more likely to have children with emotional problems.

<http://www.askdrsears.com/topics/pregnancy-childbirth/fourth-month/7-ways-bond-your-preborn-baby>

-ii] Individuals have a **substantive, in-built psychological Kit, from the point of Conception.**

If babies be hard-wired for moral issues and this can be seen as early as six months, it is possible that the fertilized egg has other capacities. Indeed, it may be seen that willful deprecation of the egg reveals willful disregard for knowledge about it (see 'Bias' in **J** below).

The hard-wired Brain (general principles). The basic anatomy of the brain is hard-wired. Electrophysiological activity - the flow of ions (ie ion current) in the biological tissues is not needed. Once the deep hardware of the system has assembled the basic architecture of the brain, the activity of wiring on top of that is governed by behavioural influence. This combination of the lower and higher levels is what makes the brain so powerful. The underlying machine, of course, has evolved (ie was not hard-wired in one way only, over the course of millennia) and so is flexible over a long timeline. Once the nervous system is in place, it is critical that it respond to the environment. On top of the basic biology, the higher levels ensure a huge, indeed infinite, flexibility (ie beyond comprehension). With such a powerful, impenetrable device as the brain, it is reasonable to deduce that Nature generally has

controlling strata, eg associated with but not controlled by, laws which we derive and use. This generality is visited again in later sections.

Medical Researchers determine invaluable outcomes using analytical observation. Increasingly, Scientific Researchers struggle with mechanisms of infinite complexity, beyond firm human grasp. Together, they work to reveal ever more of the truths about the human mind.

<https://www.dnalc.org/view/1084-Is-the-Brain-Hardwired-.html>

In **Evolutionary Psychology**, aspects of human behaviour both inborn and universal, are studied. Food, clothing and shelter were scarce on the African Savannah. Human strength lay in the mind. Helpful thoughts and emotions were hardwired into our brain – ie programmed permanently into our psyche. For example, ‘Emotion before Reason’, ‘Loss Aversion (except if threatened)’ and ‘Confidence before Realism’ - all abet survival. ‘Empathy and Mind-reading’ help to obtain confidential information. Those better able to guess what others are thinking tend to ask more probing questions. [A tendency to lose Empathy has been noted in Western Societies.] Some primitive people still practice ‘**Classification before Calculus**’, by having a complete taxonomic knowledge of their environment. Another version of this is **Human Prejudice**. People in ‘in-groups’ see others in ‘out-groups’— using **any characteristic** sufficiently salient **for ready distinction**. Research has shown that Managers sort their employees into winners and losers within three weeks. Managers can rise above their level of competence, by virtue of being in an ‘in-group’. <https://hbr.org/1998/07/how-hardwired-is-human-behavior>

Prejudice may be regarded as a form of **hard-wired common sense** – useful for evolution – ie a proven response when protecting our prehistoric fellows from attack (Stephen Neuberg, Catherine Cottrell, ASU, Journal of Personality and Social Psychology, 2005). Survival was based on group living. ‘Out-groups’ were seen as threats – though the ability to identify these evolved imperfectly. ‘In-groups’ can react negatively to other, even harmless, groups. In a modern setting, self-interested groups (often within organizations) may take decisions ‘**behind closed doors**’, purely for their own perceived benefit or aggrandisement. **Infinitely complex interactions** between biology and lived experience prompt how people choose to think, feel and behave. Evolution prepares them to be prejudiced: the environment provides targets for their prejudice. With certain ready-made tools for life, they continually adapt, with or without reflection, to what they think lies ahead. <https://www.sciencedaily.com/releases/2005/05/050525105357.htm>

Stefan Koelsch, Thomas Fritz and others in the Max-Planck-Institute for Human Cognitive and Brain Sciences, sought to find out if emotional aspects of Western music could be appreciated by people who had no prior exposure to it. Native African people, who have never listened to the radio, can nonetheless pick up on happy, sad, and fearful emotions in Western music (March 2009, Current Biology). This shows that the expression of these three basic **musical emotions can be universally recognized**. In other musical traditions, music can be appreciated for other qualities, such as ritualistic coordination.

Fritz had enlisted members of the Mafa, one of about 250 ethnic groups in Cameroon. He travelled to the extreme north of the Mandara mountain ranges, where they live. The studies show that both Western and Mafa listeners, who had never heard Western music, could recognize emotional expressions of happiness, sadness and fear, in this music, more often than would be expected by pure chance.

<https://www.sciencedaily.com/releases/2009/03/090319132909.htm>

Musical emotions, such as happiness and sadness, have been investigated using instrumental music devoid of linguistic content. However, popular and rock music, the most common genres, utilize lyrics for conveying emotions.

Sad music, with or without lyrics, recruited the Parahippocampal Gyrus (used for navigation), the Amygdala (emotion centre), the Claustrum (which creates consciousness – recent discovery), the Putamen (used in feedback for preparing for movement), the Precentral Gyrus (voluntary motor movements), the Medial and Inferior Frontal Gyri (including Broca’s area) and the Auditory Cortex.

Happy music without lyrics activated structures of the Limbic System, including the Amygdala, Hippocampus (formation of new memories of past experience), Thalamus, Hypothalamus, Basal Ganglia and Cingulate Gyrus) and the right Pars Opercularis of the Inferior Frontal Gyrus, whereas auditory cortical regions alone responded to happy music with lyrics.

These findings point to the rôle of acoustic cues for the experience of happiness and to the importance of lyrics for sad musical emotions.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3227856/> <https://www.sciencedaily.com/releases/2016/12/161221125458.htm>

The early human cell should not have to have adult human attributes to avoid ‘being dealt with’ or ‘gotten rid of’. In terminating a conceptus, one is terminating a highly advanced biological entity, operating fully from the first instant. We may say the conceptus has human attributes in good measure - and that they progress naturally, waxing and waning, throughout life. Man-made determinations regarding human termination have no natural basis. **Terminating human life**, therefore, because it is somehow, even tragically, a burden, **calls at least for evidence-based law and a clear (not pretend) decision on why individuals are targeted**. Nature does not provide for an initial period nor for an interregnum in a life, during which it may be ended under human laws – which, if at all argument-based - are unsettling for their stubborn use of **incorrect science**.

“... **legal personality exists** essentially as an abstract capacity to function in law, a capacity endowed by law **because it is convenient by law to have such a creation**. The construct of the legal person and its legal personality is purely a matter of legal expedience. The person has no moral or empirical content, thus defined”. A **legal person’s** attributes are unsuitable for claims that a **physical person** should die.

<https://books.google.ie/books?id=LP3bBAAAQBAJ&pg=PA35&lpg=PA35&dq=Expedience+in+the+legal+Definition+of+life&source=bl&ots=qkG2N1fXOO&sig=Me7kucbhVSTqco3V50kkKiLmYxY&hl=ga&sa=X&ei=UNvgVLybKeeR7AbBvIDgCA&ved=0CEgQ6AEwBg#v=onepage&q=Expedience%20in%20the%20egal%20Definition%20of%20life&f=false> <http://groups.csail.mit.edu/mac/users/rauch/nvp/misc/ibegbu.html>

-iii] Legal Constructs are too easily broadened.

Evidence adduced regarding abortion laws does not point to unquestionable logic and diligent endeavour by judges and legislators. It must be recognised that **they feel bound by societal attitudes and values** (whether or not reasoned). Opinions form and become entrenched because of what the media or authorities will say. That judges recognise an expedient side to law is a worldwide phenomenon, ensuring that abortion continues.

When secular values are tailored by authorities to meet an intent, variously defined, and legal outcomes are subject to ill-informed social and political pressure, much scope for ending targeted life is to be had. The case for more liberal abortion régimes may so be based on poorly defined terms and incorrect science. <http://bigthink.com/experts-corner/decisions-are-emotional-not-logical-the-neuroscience-behind-decision-making>

Abortion is advised by some if family well-being might be put at risk. Furthermore, **pre- and post-birth abortion** can readily be conflated. Academics from the University of Milan and the University of Melbourne's Centre for Applied Philosophy and Public Ethics wrote that **Propaganda** to the effect **1)** that both foetuses and newborns do not have the same **moral status** as **actual persons**, **2)** that both are potential persons is morally irrelevant [irrelevant to whom it is not said – and anyway the ‘potential’ tag means nothing in Nature] and **3)** that adoption of unwanted children is not always in the best interest of ‘**actual people**’. They argue for ‘after-birth abortion’ (ie killing newborns – said not to be infanticide) to be permissible in all cases in which abortion is, including cases where newborns are not disabled. <https://www.psychologytoday.com/blog/born-love/201005/shocker-empathy-dropped-40-in-college-students-2000>;

After-birth abortion - up to a child’s age of 3-6 and the killing of the elderly or ill is advocated by other activists. Another justification for killing children is that they cannot fend for themselves and are so not fully human. <http://cnsnews.com/news/article/some-college-students-approve-after-birth-abortion-age-5>; <http://www.int-res.com/articles/esep2015/15/e015p095.pdf>; http://www.virtualhospice.ca/en_US/Main+Site+Navigation/Home/Topics/Topics/Decisions/Physician_Assisted+Suicide+and+Euthanasia_+The+Issues.aspx

An American media outlet has claimed that a child's life begins when the parents feel it does. Where killing a child, at any stage, may be sought as a right, it is difficult to discern a secular, humanist value for human life. When moral or ethical values are not accepted and legal outcomes are influenced by political/media pressures, scope has been found for using (unchallenged, incorrect) science in laws to end life. Authorities anywhere can develop the idea that a right, for a guardian, to choose life or death for the person in care is more valuable than even the life of that vulnerable person. In England, eg, it was reported that (to cut costs) hospitals withheld food and drink from elderly patients so they died more quickly. Thousands of terminally ill people are put on a '**care pathway**' every year to hasten their death.

<http://www.dailymail.co.uk/news/article-2170792/Elderly-patients-deprived-food-drink-die-quicker-save-hospitals-money.html>
<http://micheleborba.com/youth-narcissism-and-social-networking/>

The establishment, legally and with some permanence, of a secular value on human life would need an effort requisite for preparing fairly complex arguments. Far from this being done, however, and to some people utterly extraordinary, an extensive range of abortionist rhetoric goes unchallenged by authorities. Insofar as the undefended Unborn are so ignored, everybody involved bears a degree of responsibility.

http://www.naturalnews.com/041398_post-birth_abortion_infanticide_Melissa_Harris-Perry.html ; <http://spectator.org/articles/62238/herod-procedure-after-birth-abortion-arrives> <http://www.thecollegefix.com/post/19896/> After-birth abortion: why should the baby live? By Alberto Giubilini, Francesca Minerva - J Med Ethics 2013; 39:5 261-263 Published Online First: 23 February 2012

E Do 'potential Persons' exist? The Start of Life.

Together with other concepts defined to promote abortion, '**Personhood**' is the status of a human having individual human rights, irrespective of when life began.

<http://www.dictionary.com/browse/personhood> ; <https://www.wired.com/2015/10/science-cant-say-babys-life-begins/>

A better understanding of the human life-cycle adds to an informed conscience. Looking at the progression of life stages, across different species, introduces educationally helpful information. Humans form restrictive **Cognitive Biases**, creating their own 'subjective social reality'. Better recognising both the zoological facts and the baseless arbitrariness of present legal abortion laws, should help to increase people's **Comfort Zones**, so (if appropriate) they can readily and more easily reflect on the Natural Order and on its Truths.

https://books.google.ie/books?id=RMUVew1nfSUC&pg=PA222&lpg=PA222&dq=comfort+zone+cognitive+bias&source=bl&ots=nLkyZ8-wRY&sig=VLKdyXzker_FRYWxhKVwpnHKDKc&hl=en&sa=X&ved=0ahUKewiT9vD1I8vMAhXjBcAKHWANA5kQ6AEIGzAA#v=onepage&q=comfort%20zone%20cognitive%20bias&f=false

-a| Other Species' Life Stages – for Comparison.

The Butterfly or Moth (Order Lepidoptera): the Mayfly (Order Ephemeroptera): the Florida Harvester (Order Hymenoptera) – potential Insects?

-i| Lepidopterans have four quite distinct stages of life: fertilized egg, larva, chrysalis (pupa) and adult.

Each stage has essential goals. <http://www.thebutterflysite.com/life-cycle.shtml>

1| A butterfly starts life as a very small, oval or cylindrical egg. **Goal:** The mother can lay very many offspring, with the probability that a few will survive.

2| As larvæ, what we call caterpillars, the animals do almost nothing but eat (and grow). **Goal:** They are gaining energy and size for the work ahead.

3| The caterpillar changes into a butterfly in the chrysalis (pupa), a vessel in which the prothoracicotrophic hormone (PTTH) causes the caterpillar to stop eating and start looking for a place to pupate. The body of the caterpillar undergoes a transformation, within the chrysalis, to become a butterfly. **Goal:** The animal can fly, importantly to find a mate.

4| The adult demonstrates its primary rôle. **Goal:** The propagation of the species is ensured.

Evolution provides different patterns in the lives of animals. Each species has its own variation on the core theme, which always includes the **equally important** beginning, maturation and decline. Now, to import the language of abortion: is the fertilized egg a potential larva or a potential butterfly, is the larva a potential pupa, is the pupa a potential butterfly? The word '**potential**', applied here, is peremptory. Scientists know the normal conditions for butterfly development. They would not see the growth entailed as being 'potential'. One stage

follows the other and there is little doubt, or potentiality, about it. The one animal is simply developing: each stage has a vital function.

To kill a ‘butterfly’ at any stage of its life is to kill an animal, which we choose to call by the fourth, short stage of its existence, **only** because this is the most striking to us. To call the animal a ‘butterfly’ is so purely a human choice – not Nature’s. **Butterflies do not eat (solid food). They use fat accumulated in the caterpillar stage. The fly only reproduces. The butterfly’s life has different stages, equally important –** for zoological reasons. <https://abutterflyrelease.com/blog/what-do-butterflies-eat/>

-ii) Ephemeropterans comprise a group of c2,000 insect species, commonly called Mayflies, estimated to have evolved over 300 million years ago.

The **nymph** (larva) lives in the water. Body shape and camouflage vary according to habitat. The number of molts through which a nymph goes, on its way to becoming an adult, does not depend on nutrition, but the increase in size which comes with each molt does. Mayfly nymphs can take from three weeks to two years to become full-grown adults. In older nymphs, **gills** are found in pairs, on each segment of the abdomen. At the last nymph stage, the insect molts into a **subimago** (the first flying stage): the mid-gut section fills with air. Nymphs will then frequently float up to the surface of the stream. The insect will fly from the water to some hidden place. Molting occurs again within two-four days to form the **imago**. Winged mayflies have functionless mouthparts and digestive tracts.

The imago mates and dies within a few hours to a day. The Greek *ephemeros* means ‘lasting but a day.’ Mating occurs in a swarm. Once a male has successfully mated, he will guard the female until she flies to water to lay her eggs. The eggs sink to the bottom: some become covered with a sticky substance and some have adhesive disks. Is a fertilized egg a potential nymph, a nymph a potential nymph with gills? Is an imago or nymph a potential Mayfly? The concept of ‘potential’ development is logically hollow. With functionless mouthparts, in the flying stages, the insect lives on borrowed time. <http://www.bugguide.net/node/view/78>

Some species are **parthenogenic**, meaning that they do not need sperm to produce fertile eggs. Is a **parthenoform nymph** a separate, new type of ‘potential’ insect? The flawed idea of a ‘potential’ anything is discredited. **Humans do not have ‘potentialities’, particular or unspecified, which allow for terminating the young of our species.** The same importance of all stages to one animal life should be evident.

http://garden.lovetoknow.com/wiki/What_Do_Butterflies_Eat; <http://news.discovery.com/animals/flying-insect-fossil-110404.htm>

http://www.biokids.umich.edu/critters/Hexagenia_limbata/ ; <http://www.ucmp.berkeley.edu/arthropoda/uniramia/ephemeroptera.html> ;

-iii) The Florida Harvester ant’s larvae become different castes (small workers, large workers or new queens) based, for the most part, on the nutrition they receive. Those fed more insects than seeds are likely to become larger (queen > large worker > small worker). Genetic differences, to a lesser extent, influence the larva’s development. Once the caste is determined, nutritional factors and social (colony size) also variously play a rôle in growth.

The larva could be a potential queen, large worker or small worker – mainly depending on the food eaten. Perhaps the larva has a great number of ever-changing ‘potentialities’. The argument is broken.

https://www.reddit.com/r/todayilearned/comments/3albc5/til_in_some_ants_its_what_the_larvae_is_fed_thats/

-b) The Start of Life – actually not Rocket Science.

A 2010 BBC documentary noted that Shark Bay **Bottlenose Dolphins** had used a tool, communicated by sound to unborn calves and showed self-awareness by teaching a young animal how to fish. The journal ‘Mathematics and Physics’, in 2016, recorded Black Sea Bottlenose Dolphins in conversation. What sort of person will kill a dolphin calf, a baby chimp, a baby elephant or other intelligent animal, because some particular awareness is not evident enough for that person?

Chimpanzees are our closest cousins genetically. Both they and humans share fundamental cognitive processes which underlie the sense of being an independent agent. The idea is that these underlie a common sense of being independent agents has been argued at law. Such positive recognition of animal attributes casts a **dark shadow over dishonest, unending attempts to terminate unborn humans**.

<http://www.theguardian.com/world/2015/apr/21/chimpanzees-granted-legal-persons-status-unlawful-imprisonment>;
<http://www.nonhumanrightsproject.org/qa-about-the-nonhuman-rights-project/>

Essential stages in our lives have usefully been compared with insect life stages. Dictated by evolution, we all share a **model of life**, with essentially the same progression. The laws of Man (eg on abortion) should not, in reason, blindly and artificially override how the laws of Nature play out. Any plant or animal starts its natural life when all that is needed is biological fuel. The Natural Laws of life are fashioned by evolution, not preordained imagination. The following is a **good working definition of the start of life**:

<http://theconversation.com/giving-a-foetus-personhood-will-have-serious-consequences-for-women-33910>

<http://www.wired.com/2015/10/science-cant-say-babys-life-begins/> ; <http://www.thecollegefix.com/post/19896/>

Human Life has commenced to be after fertilization is completed and when no more than food, water, oxygen and warmth will be required for living.

Comparisons with other members of the Animal Kingdom show that imposing legal time-limits on early stages of human life, eg regarding the emergence of ‘**personhood**’, is quite illogical. To claim a person is somehow formed, after conception, by ‘**personising**’ changes (nowhere described) which turn ‘potential’, unborn humans into real persons, at a time variously dictated by courts, only adds to a superabundant, opportunistic rhetoric. <http://barnalab.stanford.edu/page6/index.html> <http://discovermagazine.com/1992/nov/howdoesasinglece146> ;

Loose phrases are coined to make abortion seem civilized and then related, fabricated, elastic legal constructs target little individuals for elimination. Such constructs cannot describe circumstances in Nature with accuracy. Laws artificially invented, purely to facilitate terminations, reflect **hideous intent**.

A Professor of Bio-Ethics at Princeton University disregarded the idea of ‘personhood’ – supporting both abortion and infanticide, describing the life of a newborn as of less value than the life of a pig, a dog, or a chimpanzee. Most abortionists would not be so outspoken. <http://www.equip.org/article/peter-singers-bold-defense-of-infanticide/>

Artificially to pick on a human life stage – solely to allow the human animal to be dispatched – indicates **Bias**, likely derived from a previous **psychological grooming**. The ‘potential human’ and ‘personhood’ arguments combine with poor biological definitions to add clarity to the true purpose of abortion laws.

The natural progression of life-stages include a beginning, growth and maturity and finally an end. **All stages are of equal importance to a species. In a court the judge, without the requisite sagacity, will be at a disadvantage.** To define stages in ‘potential’ human life or ‘personhood’, by force of law, makes no scientific sense, indeed no good sense at all. Doing so **primarily to allow terminations** requires, perforce an evidently graceless stance, taken from the outcome backwards.

To speak of a ‘potential person’ – a person ‘possible in time or when conditions allow’ (a dictionary definition) – does not at all represent the normal prospects of a conceptus not interfered with. The word ‘**potential**’ here recalls the unfortunate linguistic error with the invention of ‘**secular morality**’ noted earlier. <http://dictionary.cambridge.org/dictionary/english/potential>

The science of when life starts is factual. It is totally ignored in the legislators’ Comfort Zone. “It’s a [woman’s] health issue not a moral one.”

found in any other **microsporidians**. The two species have so acquired, from their hosts, a set of new genes. These work together to make an essential nutrient – which the parasites would otherwise have to derive from their host. The process of ‘horizontal gene transfer’ (the ability to acquire ready-made genes, with specific functions, from foreign genomes) is an important, often overlooked, **infinitely complex mechanism** of evolution. Simple life forms should provide an understanding of and **humble respect for living things**.

<https://www.sciencedaily.com/releases/2012/07/120718164951.htm>

A **sliotar** (a small, hard ball in the Gaelic game of hurling) and a larger, deflated rugby ball only appear to be different. To say that cells in the shape of a person and cells on their way to assuming this shape are different in essence is, again, essentially incorrect. Using fabricated information or half-truths, to justify terminating the Unborn (our own kind) caught in a helpless condition, is neither kind nor compassionate but **is perforce** unbecoming. In a **reductio ad absurdum**, fit for observation here, the EU Commission Regulation (EC) 2257/94 gave an artificial, binding definition of **bananas**: they had to be ‘free from malformation or abnormal curvature... and at least 14 cms long’. Would it were that all arbitrary laws against human life met the same end as the **Bendy Banana Law**.

-ii] The Kingdom Protista.

In plants and animals, patterns of growth are mostly regular – eg in the adults of the Kingdoms Animalia and Plantae. Adult Slime Molds - within the paraphyletic group [ie composed of some but not all members descending from a common ancestor] called the Kingdom Protista - follow different rules. Slime Molds are organisms in two taxonomic groups [ie groups classified under scientific principles], the cellular Slime Molds (Phylum Acrasiomycota) and the plasmodial Slime Molds (Phylum Myxomycota). Both groups are eukaryotic (their cells have nuclei) and, inter alia, pass through fungus-like stages during their life. There are in excess of 500 species.

In Slime Molds, no regular growth pattern occurs. Formless cytoplasmic masses evolve, appearing as gelatinous ‘slime’, around half-way through a life cycle. The various stages are - **a)** spore germination, **b)** haploid amoebae [which have only one complete set of chromosomes] - eating bacteria – located by chemotaxis (chemical gradient sensing), **c)** all the food eaten, starving amoebae form into streams of cells, **d)** these aggregate into a pseudoplasmodium (moving at 1mm/hr), **v)** they stick together by secreting adhesion molecules - a slime sheath - over all the c100,000 cells, **e)** they now behave as a small garden slug - **not** a clump of cells, but a very highly and continuously organising and communicating community, **f)** migration is driven by proximity to ammonia, from nearby decaying matter; **g)** the cells, at a favourable spot, differentiate into a sporocarp, a fungus-like non-reproductive stalk, a spore cap and spores and so, **h)** on germination of a spore, a pore appears in the cap – and an amoeba escapes to begin a new cycle. All of these actions require an infinitely great, **infinitely complex set of instructions** for the Slime Mold.

Slime molds also run a sexual life cycle which is very different – but equally as extraordinary as that described. Having either a sexual or asexual reproduction phase is not unknown in animals, eg, Bdelloid Rotifers (a group of microscopic aquatic animals, around for the last 40m years), Komodo Dragons, Pit Vipers, Boa Constrictors, Burmese Pythons, Sharks, Freshwater Snails, Cape Honeybees, Turkeys and **Mice** - which latter are mammals. [Asexual means that the father can be done without.]

Whether of **the human** or of the eg **Dictyostelium discoideum** (Slime Mold) species - any distinct, formless mass of cells - whether after conception or well on into a life cycle – is most certainly **not a lump of meat**. In both cases, life proceeds, as vital and as fully characteristic as that stage requires and as at any other stage. It is a caution that Man can contort the wonders of Nature, to choose and misrepresent human characteristics, **for the gruesome purpose** of cutting short human life, if this be seen at all as bothersome. Through the myriad of its different and changing life’s pathways, the basic nature of a Slime Mold never changes. So, to claim an person may be dispatched during some ill-defined life phase is repugnant.

<https://universe-review.ca/R10-18-slimemoulds.htm>; <http://news.nationalgeographic.com/2017/01/zebra-shark-virgin-birth-reproduction/>

<http://www.encyclopedia.com/plants-and-animals/microbes-algae-and-fungi/moneran-and-protistan/slime-molds>
<http://www.ibtimes.co.in/asexual-reproduction-is-common-in-wild-snakes-recent-study-shows-383390> ; <https://www.britannica.com/science/growth-biology> http://www.ansci.wisc.edu/jip1/ansci_repro/misc/project_websites_07/thur07/shark/index_files/page952.htm
<http://www.sparknotes.com/biology/microorganisms/protista/section3.rhtml> ; <http://www.microbeworld.org/types-of-microbes/protista/slime-molds>

-iii] Embryos: complex little Individuals.

The first rapid proliferation of embryonic cells precedes differentiation into specialised cells. Whilst proliferation slows, adult cells mostly remain metabolically active but do not divide again – unless other cells lost are eg through injury. Some keep dividing, to replace cells with a high turnover rate (eg in the stomach). When enough cells have differentiated, they communicate both via molecules and nerves. Stages in nervous development, as shown by EEG or electroencephalography (ie brain activity), have been proposed for terminations, with little or no basis. <http://brainblogger.com/2009/05/10/medical-controversy-when-does-life-begin/> ; <https://www.khanacademy.org/science/biology/cell-signaling>

a) Fertilization (ie Conception).

Combining an egg with a sperm, fertilization, begins biological human development, our humanity being the core and essence of who we are. A fertilized egg (a zygote) becomes a morula (a ball-shaped structure) after dividing four times. The integration of **both parents' DNA into the cell nucleus** occurs at the zygote stage. All the information to make a complete, fully functional living organism is encoded within the genome of the fertilized oocyte (female gamete). It takes about four days for a human zygote to become a morula and another three for the morula, implanted in the mother's uterine wall, to become a blastocyst (or blastula, an early embryo). Communication between cells then decides upon organ location and size.

Mature cells intercommunicate bio-electrically and chemically. The membrane voltage (*transmembrane voltage* - V_m) of an excitable cell is defined as the potential at the inner surface (Φ_i) relative to that at the outer (Φ_o) surface of the membrane, i.e. $V_m = (\Phi_i) - (\Phi_o)$. This definition is independent of the cause of the potential and of whether the membrane voltage is periodic or non-periodic. If a nerve cell is stimulated, the transmembrane voltage necessarily changes. If the excitatory stimulus is strong enough, the transmembrane potential reaches a threshold and the membrane produces a characteristic electric impulse, a **nerve impulse**. This response follows a characteristic form regardless of the strength of the transthreshold stimulus. It is said that the *action impulse* of an activated membrane follows an all-or-nothing law. <http://www.bem.fi/book/02/02.htm>

Early cells migrate to where they begin to differentiate: their behaviour drives development. A cell can 'know' where it is, from complex protein signals or by 'communicating' with its nearest neighbours, by sending or receiving chemical signals. Later, the ability of cell networks to process information and **make group decisions** is implemented by **bio-electrical, chemical** and other signals. Errors in this process can give rise to birth defects and cancerous growths. By learning the bio-electrical language that cells speak to co-ordinate their activity toward correct organ shape and placement, scientists hope to be able to improve weak organ growth. <https://genedoe.wordpress.com/tag/pregnancy/>

b) Sensations of Pain, an issue for some Abortionists, begin with little Molecules.

Molecules begin the conversation about Pain, cells take it up. Small molecules - amines, steroids, peptides, nucleotides and gases – are the first players in the internal recognition of pain. Most of these molecules interact with cell surface receptors which trigger changes in cell activity. Some diffuse across the cell plasma membrane to bind with intracellular targets. The human body has a large number of chemical messengers, which facilitate internal communication and signal transmission.

Cellular targets and receptors are connected via signal transduction [a process by which a biological cell converts one kind of signal into another, eg chemical to electrical]. Several proteins, small molecules and ions are again involved. Cells contain several signal transduction pathways, between which crosstalk occurs. Via such communication, groups of cells can regulate both their own activities and those of other cells.

Molecular signalling effects can be fast or slow. Fast responses are transient and usually involve changes in protein activity (eg muscle contraction, changes in metabolism). Slow ones occasion the

synthesis of new proteins. The effects can generate long-term changes in cell behavior. The same signalling molecule can trigger both a fast response and then a slow, long-term change in behaviour.

Signalling between cells can also occur over a varying distances. **Paracrine** signalling involves cells in the one location (eg tissue), so the signalling molecule does not enter the blood stream. **Autocrine** signalling is a form of Paracrine signalling - in which the signalling molecule affects the cell which produced it. **Endocrine** signalling involves cells in various locations (tissues), with transport via veins.

http://medcell.med.yale.edu/lectures/cell_communication.php ; http://www.mind.ilstu.edu/curriculum/neurons_intro/neurons_intro.php ;
<https://molecularbrain.biomedcentral.com/articles/10.1186/1756-6606-4-31> ; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2852643/> ;
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4534341/> ; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3017463/>

c) Neurotransmission.

The nervous system comprises special cells (called neurons) of **i)** the brain and spinal cord or Central Nervous System (**CNS**) and **ii)** the sensory and motor nerves or the Peripheral Nervous System (**PNS**). CNS neurons interact with target neuron cells, communicating via small molecules (neurotransmitters). This forms a specialised type of signaling and another count to Infinity, as regards signal variation.

There are c200bn neurons in the brain, with around 10,000 specific types of these, each of which has from 5-20,000 connections to other neurons. The number of ways in which information flows across the brain's neurons is greater than that of all the stars are in the known Universe. This is one infinitely little piece of information, which inter alia multa, shows that it must take an Infinite Intelligence to maintain the laws which allow the brain to work. We may too, at this point, have regard for **René Descartes**: his investigations opened the way for us to penetrate geometries with infinitely many dimensions, impossible to visualise. Now, if we can do these sums, why not countenance yet other, uncountenanced Infinities in our Universe? In the Infinity enveloping us and in us, confronting the concept of multidimensional Universes is surely fettering. Reflections on reasons for our being here at all are given in the Addenda.

d) Neurons process Information.

All our sensations, feelings, thoughts, motor and emotional responses, learning and memory, the actions of psychoactive drugs, the causes of mental disorders and any other function or dysfunction of the human brain cannot be understood without knowing about the communication which happens between nerve cells - neurons. They must continuously gather information about internal and external environments, evaluate this and coordinate actions. Three main functions are shared by the many types of neuron: **sensory neurons** carry sensory information, **motor neurons** motor information, and **interneurons** information between different types of neuron. Neurons process information by means of nerve impulse or the transmission of **coded signals** from a given stimulus, often along the membrane of the neuron.

<http://www.cerebromente.org.br/n12/fundamentos/neurotransmissores/neurotransmitters2.html>

Specialized peripheral sensory neurons (**nociceptors**) alert us to (possible) damaging stimuli on the skin, by eg detecting extremes in temperature and pressure or injury-related chemicals, and converting these stimuli into electrical signals to be relayed to higher brain centres. The activation of functionally distinct **cutaneous nociceptor populations** and the processing of information they convey provide a diversity of pain types.

e) Nerves control bodily Responses to Information.

Nerves are peripheral, whilst networks of neurons are located in the brain and spinal cord. Afferent neurons conduct nerve impulses to the brain. From there, nerves transmit instructions to various parts of the body. Electrical nerve impulses propagate a signal within a neuron. Chemical impulses transmit a signal from one neuron to another or to a muscle cell. The chemical process of interaction between neurons and eg between neurons and effector (immune defence) cells occurs at the end of the axon in a synapse. [Axon: the long thread-like part of a nerve cell along which impulses are conducted from the cell body to other cells. Synapse: the structure which permits one nerve cell to pass chemical (or electrical) signals to another.] The function of cells in the nervous system (ie of neurons) is to control and coordinate bodily functions, so

enabling appropriate responses to the environment. Synaptic transmission is the key process in the integrative action of the nervous system. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2964977/>

f] Babies with undeveloped Brains.

The neural tube is a narrow tube which normally folds and closes in the **third** or **fourth** week of pregnancy, so forming the brain and spinal cord of the embryo. **Anencephaly** occurs when the 'cephalic' or head end of the neural tube does not close and major portions of the brain, skull, and scalp do not grow. These grievously ill babies lack a forebrain or neocortex (part of the cerebral cortex), which mainly comprises the cerebrum, thalamus, cerebellum and hypothalamus. These are used for sensory perception, motor control, speech and thinking. The babies are usually blind, deaf, unconscious and unable to feel pain as adults do. Most die before birth - some surviving for a few hours or days. Babies born with anencephaly usually have only a brainstem – the first part of the brain to evolve. It controls basic functions – eg the heart beat and breathing. Whilst the babies can respond to an assault on their bodies, their brains cannot know what is happening.

<https://braindecoder.com/post/born-without-brain-1223884820>; <https://rarediseases.info.nih.gov/diseases/5808/anencephaly/cases/27367>

g] Fish also lack a Neocortex.

Much is stated, by perhaps too ready inference from investigation, about the pain fish may or may not feel on being caught. Researchers have pointed to behavioural changes - rubbing their mouths on gravel at the bottom of their tank and rocking (similar to stressed mammals) - as evidence of inflicted pain. However, only an extremely small number of 'C fibres' - a type of nociceptor related to pain - can be found in trout and other fish. **Professor James Rose** (University of Wyoming), has explained that a fish's brain does not contain a neocortex and so does not experience pain in the way humans understand it. The neocortex was (by its name) the last part of the brain to evolve.

If fish cannot feel pain anatomically, why do they act as if they can — thrashing and darting. Rose suggests the animals are simply trying to escape in unconscious flight - an automatic reaction to being pulled in a new direction. This is not universally accepted. The issue of pain and chaos, not processed by the CNS, has not yet been widely examined.

<http://www.telegraph.co.uk/news/science/science-news/9797948/Fish-cannot-feel-pain-say-scientists.html>
<http://www.livescience.com/37921-do-fish-feel-pain-fish-pain.html> ; <https://dtmag.com/thelibrary/fish-feel-pain-matter-scientific-debate/>

h] Embryos: complex little Individuals.

There are four neurological stages from a person's feeling a breeze and breathing fresh air in response. In the case of fish, with no neocortex, only two stages can be involved. In embryos with anencephaly, only two stages are involved for the same reason. Such small humans are not so different from other humans with a serious disability. If grievously ill babies can attain the neurological levels normal for certain other animals – and are of our own kind – they are not to be discarded with disdain. They have made it half-way neurologically. At least let Nature take its course and give parents a chance to embrace their child and know that they are all participating in the Infinities, touched upon in the **Addenda** below, and beckoned to wonder about the purpose which knowledge of these inspires.

Many approve of abortion if the child should not feel pain as adults do. For early and anencephalic babies being terminated, however, other chaos and unprocessed pain - caused in their curtailed but active human neurology - is not averted to by unctuous legislators (or, more likely, is set aside).

Dr. Robert Arlinghaus of the Leibniz Institute of Freshwater Ecology and Inland Fisheries and of the Humboldt University worked on a project which shows that it is absolutely **not scientific to interpret the behaviour of fish from a human perspective**. Pain killers such as morphine, which are effective in humans, are either ineffective in fish or were only effective in lethal, astronomically high doses. Experiments with bees and fish, stuffed with morphine, cannot be validated upon a casual say-so. **The child with anencephaly has, even from an obvious human perspective, achieved a goodly level of life and any difficulties to be faced do not excuse his/her termination.** http://www.fv-berlin.de/news/do-fish-feel-pain?set_language=en

G “I can do what I want with my Body.”

Other slogans include: “I want my privacy.” “I demand sexual and reproductive rights.” “I want bodily autonomy.” “I demand comprehensive sexual education.” “**I should not have to be pregnant if I do not want to be.**” Media and politicians do not comment on the sheer breadth of language used to euphemise terminating a foetus. They certainly do not analyse the broad range of common utterances and, in practice, even let these pass without query. Separating the wheat from the chaff, of course, needs an open and disciplined mind. Spin is easier.

-i] The Development of the human Body.

Humans have their developmental stages, albeit less obviously different than those of the insects reviewed but each stage nonetheless critical for life.

1) Conception gives rise to a zygote, a single cell, which contains the human genetic information (DNA) derived from a man and woman. DNA has the instructions needed for developing a cell into an adult. From the point of conception on, the zygote only needs **food, water, oxygen and warmth**: a new life has begun.

At the start of life any animal – eg a human or a butterfly– gets its own, unique DNA. This is a sequence of nitrogenous bases (molecules), which control all physical aspects of our existence (including the mechanism of implanting in our mother’s womb and of cell differentiation, the height when born and, at maturity, the basic intelligence, colour, length of life, digestion, speed and extent of hair and nail growth et cetera. **Scientists** have spent many lifetimes studying DNA. Its orderly functioning cannot reasonably be set aside, so to allow a contention (dismissed above anyway) that the basic nature of an animal, as life progresses.

2) The zygote grows into a blastocyst. This travels to the womb, buries itself in the uterine wall and receives nourishment from the mother’s blood.

3) An embryo then develops. The brain, nerves, heart, face arms, legs and other features start to form in the 5th week (the ‘embryonic period’).

4) Finally, a foetus is formed - a baby on his/her way to life in the world. The foetus grows, for nine months, into an advanced life form. The born foetus is called a child: a human determination, not Nature’s. Differences between a foetus and a child normally include physical disposition and independence from the mother’s body for the normal necessities of life.

5) Human adults, inter alia, bring about a new generation. Old age draws generations together.

-ii] An early Embryo can live separately from a Mother: foetal Autonomy.

The mother’s life is a Life in Being, according to Judge McCarthy: he was quoted in the European Court Application no. 25579/05, para 43. He thought the embryo only has a life contingent on its survival in the womb. Judge McCarthy was mistaken, insofar as what he said was to be taken as a general principle. Where an embryo can be shown, not just in theory but in practice, to have a life not contingent on the life of the mother, then to say that this is so, serves only as **Propaganda** to support ignorance or **Indifferentism**.

Scientists have developed artificial wombs, in which embryos can live outside of a woman's body. Embryos have successfully attached themselves to the walls of prototype laboratory wombs, which contain cells extracted from different women's bodies. [Growing embryos are sacrificed, after a few days, to comply with IVF regulations.] Artificial wombs, nonetheless, can be *safer* than natural ones.

<http://www.theguardian.com/world/2002/jan/17/gender.medicalscience>; <http://io9.com/how-to-build-an-artificial-womb-476464703>

This technology and others show that a separate individual can survive outside a mother’s womb. If artificial wombs were more developed, abortion could be contained. Unwanted pregnancy might no longer have to mean a **death sentence for the Unborn**. Work is ongoing, using advanced biomaterials, to mimic the womb.

<https://www.youtube.com/watch?v=bPufQqnzEug> ; <http://www.sciencedirect.com/science/article/pii/S014067369292240G>

https://motherboard.vice.com/en_us/article/artificial-womb-free-births-just-got-a-lot-more-real-cambridge-embryo-reproduction <http://www.lohww.org/artificial-uterus-a-therapy-for-premature-babies-with-smart-textiles/>

Abortion laws are typically tied to the stage at which a foetus is thought to be viable outside of the womb - about 22 weeks. With a foetus now being viable at one week and living in an artificial uterus, abortion rules are again shown to encompass a wide range of falsehoods. The conceptus is a strictly separate entity. Recently, an artificial soup of nutrients was invented, which mimics conditions in the natural womb, and kept an embryo alive for 13 days, without implantation. The embryos used in the study were donated by IVF patients. **At no stage are parents called upon.** <http://www.innovationessence.com/artificial-motherless-births/>
<http://www.telegraph.co.uk/science/2016/05/04/artificial-womb-breakthrough-sparks-row-over-how-long-human-embryo/>

It was known that, normally, the embryo (in the very early post-implantation stages) undergoes critical cell-cell interactions which establish the body plan: there used to be no way readily to study these. It was unexpected to discover that, without any input at all from a mother, **the human embryo can direct its own development**, even after it reaches the point when it should have implanted. This firmly establishes the existence of fully independent life, proceeding seamlessly as predicated under the **Natural Order**.
https://motherboard.vice.com/en_us/article/artificial-womb-free-births-just-got-a-lot-more-real-cambridge-embryo-reproduction

-iii] A late Embryo could live separately from a Mother: foetal Autonomy.

In a new study, reported on April the 25th, 2017 in *Nature Communications*, researchers at the Children's Hospital of Philadelphia (Pennsylvania) were said to have placed a premature lamb foetus inside an artificial womb - for four weeks - until birth. Many technological obstacles were overcome to produce the device - called a 'biobag'. One tube supplies artificial amniotic fluid and another drains it out. The animal's brains and organs developed normally. It gained weight and had, on birth, grown a wool coat, opened its eyes and was overall healthy, looking around.

The researchers successfully tested eight more preterm lambs, delivered by Caesarian Section at c110 days' gestation — equivalent to 23 or 24 weeks in humans — the edge of viability. 'They appear to have normal development in all respects', said researcher **Dr Flake**. Whilst some lambs did have complications, the advance means human testing is c5 five years away.

Some 30,000 'critically preterm' babies (ie younger than 26 weeks) are born annually in the US. Before 24 weeks only c50% survive, most likely enduring long-term complications. **Anna David**, a maternal- foetal medicine specialist at University College London (UCL), referred to the extraordinary skills of the Philadelphia team: "the foetus knows what to do" and noted that the physicians - as best they could - stepped aside and ceded control. From yet another point of view, the 'clump of cells' formalism is again shown to be hollow.

Some 'moderate' abortionists sell the idea that killing foetuses before they reach 'viability' is without issue. [Of course, for the 'as late as necessary' cohort, abortion is fine up to when the baby enters the mother's birth canal, if not indeed later.] Artificial wombs concern these activists, as the new devices reduce the age of viability for babies. <https://www.nasaspacespaceflight.com/2016/12/vir-v-planet-nine-boundaries-solar-system/>

The Philadelphia researchers emphasized they will not expand the bounds of life before the **23rd gestational week**. Before that point, foetuses are just too fragile. By another token, researchers elsewhere are lengthening the time a conceptus, formed in vitro, can be helped to live.

Technology can readily be looked to, to usher in the time when the fertilised egg can be seen to have been fully 'viable' from conception, with such nutrition as is required. Not only does that mean that States, for too long, have practised **judicial killing**, by this reasoning but that continued pressure for abortion draws aside **the threadbare drapes** with which the Abortion Industry has covered up falsehood.

<http://www.planetary.org/explore/space-topics/exoplanets/transit-photometry.html> ; <http://www.sciencemag.org/news/2017/04/fluid-filled-biobag-allows-premature-lambs-develop-outside-womb> <http://www.dailywire.com/news/15780/could-artificial-wombs-be-abortion-kryptonite-paul-bois> ;
<https://www.theatlantic.com/health/archive/2017/04/preemies-floating-in-fluid-filled-bags/524181/>
<http://news.nationalgeographic.com/2017/04/artificial-womb-lambs-premature-babies-health-science/> <http://metro.co.uk/2017/04/26/lamb-born-in-plastic-womb-could-help-save-premature-babies-lives-6597659/> ; <http://uk.businessinsider.com/baby-lamb-fetus-inside-artificial-womb-2017-4?r=US&IR=T>
<https://www.theguardian.com/science/2017/feb/22/thrilling-discovery-of-seven-earth-sized-planets-discovered-orbiting-trappist-1-star> ;

-iv] Other Refuges for unwanted Babies.

An Embryo Transfer Service for Donors and Recipients. Cryonics is the science of preserving embryos/fœtuses extracted from a uterus, at ultra-low temperatures, for eventual revival. **More research is required to develop the technology.** According to the International Committee for the Monitoring of Assisted Reproductive Technology, hundreds of thousands of embryos are currently cryopreserved. Embryo cryopreservation does not venture beyond the blastocyst stage: it relies on natural implantation in the endometrium. By adopting regenerative medicine methods, cultured placental tissue, eg, could allow for foetal implantation outside the womb. <http://jetpress.org/v25.1/minerva.htm>

[The matter of saving a conceptus using cryogenics is mentioned as a future possibility in this paper. A ground-breaking cryogenic method was first confirmed as successful on the day another draft of this submission was made to the Irish Citizens' Assembly (14/11/2016). A woman had her fertility restored, using her cryopreserved ovarian tissue (containing her own eggs), which was removed when she was a child suffering from cancer. Following IVF treatment, she has now given birth to a baby boy, at the Portland Hospital in London on Tuesday.]

<http://www.medicaldaily.com/woman-gives-birth-using-ovary-was-removed-and-frozen-age-9-406588>

-v] Legislators and Courts advance societal Expectations and reject scientific (physical) Truth.

Again showing the view of the European Court to be misinformed - that an embryo only has a life contingent on survival in the mother's womb - doctors in California announced in 1984 the birth of a baby conceived in one woman's womb and carried to birth in another's. A service for transferring an embryo to a recipient's uterus is run by the California Conceptions Donor Embryo Program. Participants may have up to three transfer attempts. Most participants are successful. A legislator, who maintains a theoretical principle that an embryo's life can only depend on his/her mother's wishes, is giving out **Propaganda**.

Of course scientists and legislators, media, courts et al. cannot agree when life begins. If physical fact had to drive law, as it should, abortion would not feature - nor the dishonest language which goes with it.

<http://www.nytimes.com/1984/02/04/us/infertile-woman-has-baby-through-embryo-transfer.html> ; <http://www.californiaconceptions.com/>

Whilst a mother, unquestionably, owns her own body, circumstances (including the most tragic) may result in its being shared with another, separate human being. **She also shares, with the father and the State, a great responsibility, poorly met by dispatching her living offspring.** In England, for example, statistics on abortions of children with disabilities or who did not originate from a consensual act, reveal a pervasive, casual, dire approach to terminations, with little (**usually no**) thought for the discarded, unborn individual. <http://www.telegraph.co.uk/science/2017/03/02/artificial-human-life-could-soon-grown-lab-embryo-breakthrough/>

H A Mother's Life and Health - and Abortion helps this?

A reason for 'termination' is often said to **'preserve the health or life of the mother'**. Information available on **maternal reproductive health** would suggest that the claim serves as another strand of **Propaganda**.

Leading Irish gynaecologists, including Eamon O'Dwyer, David Jenkins, Kieran O'Driscoll, Julia Vaughan, and John Bonner, in the "Statement by Obstetricians," *The Irish Times*, 1/4/1992:

"We affirm that there are no medical circumstances justifying direct abortion, that is, no circumstances in which the life of a mother may only be saved by directly terminating the life of her unborn child."

Dr. Hymie Gordon, Director of Medical Genetics, Mayo Clinic, Rochester, Minnesota, 15/10/1974: "In more than 25 years now of medical practice, I have come to learn that if a woman is healthy enough to become pregnant, she is healthy enough to complete the term - in spite of heart disease, liver disease, almost any disease. As far as I'm concerned, there are no medical indications for terminating a pregnancy."

Alan F. Guttmacher, MD, {vide the Guttmacher Institute (linked to the US-based Planned Parenthood)} in *The Case for Legalized Abortion Now* (Berkeley, Calif: Diablo Press, 1967):
 “Today it is possible for almost any patient to be brought through pregnancy alive, unless she suffers from a fatal illness such as cancer or leukemia, and, if so, abortion would be unlikely to prolong, much less save life.” <http://www.nrlc.org/archive/abortion/pba/HowOftenAbortionNecessarySaveMother.pdf>

In loosening Texas abortion regulations, the US Supreme Court cited ‘womens’ health’ as their reason. They neither referred to the life of a baby nor to the lack of evidence against existing Texas regulations. The Court overturned requirements on Texas facilities, when performing abortions, to meet hospital-like standards. <https://www.texastribune.org/2016/06/27/us-supreme-court-rules-texas-abortion-case/>

-i] A Canard which Administrations think gives them an ‘Air of Decency’.

The mental health of a mother, with a prenatal diagnosis of Fatal Foetal Abnormality, requires special consideration. Neonatal Palliative Care will provide the bedrock of support upon which she should be able to depend. Research on the prenatal condition reveals four main issues: **(1) defining the condition (an uncertain science)**, **(2) the validity of the source of information obtained and its nature – and the communication of this**, **(3) therapeutic options and decisions and (4) palliative care (limits and criteria)**. Research and qualified doctors are needed to identify factors which benefit parents. Nurses can best lead research on these topics and implement evidence-based practice, based on study findings.

The stress of carrying an unviable baby to term is often said to be too much for the mother. The breakdown of the mother’s attachment to her unwell child is triggered by the child’s condition. Looking at research from different angles, on unviable pregnancy, is helpful. That both acceptance and rejection of young, follow natural processes, is a feature in the Animal Kingdom. Human rejection has been recorded. https://books.google.ie/books?id=xUg_k4CEfQ4C&pg=PA7&lpg=PA7&dq=why+does+a+mother+reject+her+own+baby&source=bl&ots=7m9d_oqhtk&sig=ysB6D4PPbIR-mqlr8kNf0szUq8g&hl=ga&sa=X&ved=0ahUKewiT9_OOR5HLAhXImw4KHWb2Bhw4ChDoAQhCMAC#v=onepage&q=why%20does%20a%20mother%20reject%20her%20own%20baby&f=false; ; http://teacher.scholastic.com/professional/bruceperry/bonding.htm
https://books.google.ie/books?id=a62J5GPHd3cC&pg=PA9&lpg=PA9&dq=rejection+of+child+deformed&source=bl&ots=hYyewMcpOk&sig=yO37Rx63XThrJtAfz93WwOLxSk&hl=ru&sa=X&ved=0ahUKewjp3Z_ch77WAhUqC8AKHd2tBtsQ6AEIKzAB#v=onepage&q=rejection%20of%20child%20deformed&f=false

-ii] Governments do not have Empathy.

Research on patients with stillbirth, in Rockford Memorial Hospital, emphasized the importance of seeing the dead infant as part of the grieving process. Parents of infants with external congenital defects are not repulsed by the appearance of their infant and most emphasised the normal aspects of the child. A major advantage of **Perinatal Hospice Care** is that a significant majority of these infants can be live-born, allowing parents and family a chance to share precious time, whether long or short, with their infants. Indeed, parents valued special time with their infants, even if only to mourn them.

The need for comprehensive, especially psychological, care for families of infants who will die in utero, or live for only a short while after birth, has been underestimated. Perinatal Hospice Care furnishes support to families - allowing them to explore life issues, prepare for the precious time they may have to spend with their child and then to grieve. Researchers recognize that commitment and tireless effort is required from the dedicated staff who provide this care. A multidisciplinary approach is essential.

When mothers are given comprehensive, multidisciplinary, individualized, and informed counsel, concerning a possible ‘**fatal foetal abnormality**’ (another abortionist term), they will often seek Perinatal Hospice Care. These parents are thus enabled fully to experience the birth of their child and the bonding which occurs during the antepartum and immediate postpartum period. This experience helps parents reach a more peaceful acceptance of the death of their child. They may rest secure in the knowledge that they shared in their baby’s life and treated him/her with the same dignity afforded other terminally ill individuals and under the best of circumstances. Comparison with parents who have had no indication but towards abortion and whose child ends up as hospital waste is notable.

The Irish people may reject the termination of the infirm Unborn. The medical situation holds great promise for parents. Either not knowing biology or hoping others don't, some abortionists will claim **ethical values are historically based on religion**, to make their case stick. This inventive rhetoric is insensitive and joins such a slew of mindless slogans and untutored claims that a rational case for abortion is undone, whilst the practice continues. Decision-making is looked at in the Addenda.

Advances in Perinatal Care have changed the decisions faced by parents, when they receive a diagnosis of life-limiting or life-threatening conditions. The value of **Perinatal Palliative Care** has been recognized **only recently** as a viable option (ie the importance of planning for the limited amount of time mothers and other family members may have with their baby). Although Palliative Care has aroused interest in perinatal medicine, there are (March, 2012) no evidence-based empirical studies which indicate the best model of care. **The absence on stage of the Irish State**, in developing Perinatal Hospice Care, or other technologies which succour the Unborn and recognise their humanity, may reflect an unprincipled political assumption that **i) abortion will be approved (allowing for the usual, vacuous affronts about deeply held moral beliefs), and that ii) all science and medicine, which can save lives and life, may be ignored.**

<https://www.ncbi.nlm.nih.gov/pubmed/24854190>; <http://www.jpands.org/vol11no2/calhoun.pdf>; <http://www.dailymail.co.uk/news/article-2893519/Woman-diagnosed-rare-skin-cancer-refused-treatment-save-unborn-son-dies-New-Year-s-Eve.html>; <http://www.upworthy.com/her-baby-has-trisomy-18-she-reminds-us-to-enjoy-every-moment-of-parenthood?c=ufb1>; <http://www.urbanchildinstitute.org/articles/editorials/stress-has-lasting-effect-on-childs-development> <http://online.liebertpub.com/doi/abs/10.1089/jpm.2014.0023>; <http://bmcpediatr.biomedcentral.com/articles/10.1186/1471-2431-12-25> http://journals.lww.com/jpnjournal/Abstract/2006/01000/Extending_Palliative_Care_Into_Pregnancy_and_the.32.aspx

Legally taking Life, young, old or ill, is called judicial Killing.

I A grievously ill Conceptus - and a grievously ill Adult.

Isolating the grievously ill conceptus for termination is the first path followed both by abortionists and by those ignorant of research on the positive relief of maternal stress. The publication 'Fetal and Neonatal Neurology and Neurosurgery' (Ed. Malcolm I. Levene, MD FRCPCH FMedSc and Frank A Chervenak MD FACOG MMM), describes some of the extraordinary advances made in the neonatal care of unwell term and preterm infants. The concluding comment in this impressive volume is to be noted:

"In tackling the ethical dilemmas of life-saving intervention in the newborn, the clinician must always act in the best interests of the child. Potential conflicts with this guiding principle include: i) the interests of the child versus those of the parents or the State, ii) ethics versus economics, iii) heroic management versus humanitarianism."

Nobody demands the impossible. These editors, for the many ground-breaking authors, are urging that what is possible be done. The most complex detailed work imaginable has and is being conducted, in every way to improve outcomes for ill babies. A difficult choice has to be made, without question, if a mother's life be at stake, eg if she have an illness and require medication, which would harm her baby. In a situation where reasonable efforts to save mother and child have come to nought, **neither the mother, nor the Doctors who look after her, should be under legal threat.**

https://books.google.ie/books?id=Ab9u_AyU9aUC&pg=PA199&lpg=PA199&dq=neurology+in+severely+ill+fetus&source=bl&ots=J6ziCviNOq&sig=8D72nCuURxeC3CkMKehv0qHI9pl&hl=ga&sa=X&ved=0ahUKEwjG_trNqtPNhXpJMAKHRN7DsEQ6AEIJTAC#v=onepage&q=neurology%20in%20severely%20ill%20fetus&f=false; <http://www.med.upenn.edu/apps/faculty/index.php/g324/p17088>

Palliative care for the gravely ill neonatal is increasingly multidisciplinary. The goal is to provide the best quality of life and symptom relief at the end of life. **Child Neurology** can optimise the care for infants with congenital malformations. Infants born preterm are vulnerable to many complications, including respiratory distress syndrome, chronic lung disease, injury to the intestines, a compromised immune system, cardiovascular disorders, hearing and vision problems. Better methods of evaluating foetal and infant maturity and many of the medications and treatment strategies used in Neonatal Intensive Care Units have not been adequately evaluated for their efficacies and safety. Long-term health and neurodevelopmental outcomes should be the focus of new trials of treatments and

intervention strategies for neonates born preterm. <http://www.ncbi.nlm.nih.gov/books/NBK11385/> ; <http://www.sciencedirect.com/science/article/pii/S038776049390080R>

Scientists' discoveries can bring hope and joy to mothers with an infirm foetus. Rather than counselling a woman with a crisis pregnancy that her baby can be remembered with warmth and pride, some would lead her from having a crisis pregnancy to an unwanted one, with a sorry end.

A welter of false information and strident vocabulary pronounces in favour of aborting an infirm foetus. But even an infirm foetus is a member of the human family. **Health should not be the reason s/he lives or dies.** <http://www.telegraph.co.uk/news/health/news/9113394/Killing-babies-no-different-from-abortion-experts-say.html>

The Irish State should provide positive counselling and engage in emerging psychotherapies, for crisis pregnancies. When misrepresentations covering the act of abortion are set aside, it becomes clear - irrespective of how the conceptus is or came about – that that act is inseparable from acts which come under the **heading of murder**. Abortionists here, whether mercilessly or ignorantly, will use a mother's sad condition to justify the termination of her infirm foetus and its **outlawing from legal protection**.

<http://www.telegraph.co.uk/news/health/news/9113394/Killing-babies-no-different-from-abortion-experts-say.html>
<https://www.politicshome.com/news/uk/health-and-care/nhs/news/84081/tory-peer-abortion-laws-are-licence-kill-disabled-babies>

***The State should be honest, if it introduce judicial Killing of the Unborn, infirm or not.
 Political Spin cannot hide the Truth forever.***

J Why Dehumanising eases Killing.

“Love looks not with the eyes but with the mind – and therefore is winged Cupid painted blind.”
 (Shakespeare's 'A Midsummer Night's Dream')

Circumstances can drive people anywhere to certain courses of action. Knowledge and character determine outcomes. Cognitive scientists are concerned with mental faculties, eg emotion, tone, perception, attention, memory and reasoning. Psychologists and scientists define Bias in different ways but they all see it as distorting how we think. People tend to see what they want to.

<https://www.psychologytoday.com/blog/science-choice/201504/what-is-confirmation-bias> ; <https://www.psychologytoday.com/basics/groupthink%20%20>
<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0137585>; <https://psychologytoday.com/blog/kidding-ourselves/201404/we-see-what-we-want-see> ; <http://www.science20.com/sarah-harrison/do-we-only-see-what-we-want-see-experts-dont-notice-gorilla-their-midst-116822>

The history of killings globally is evidence that there is a psychological process which leads to this. There are three (possibly overlapping) elements: the motivation to kill, the existence of a Bias or Prejudice against the target and dehumanisation. **People's reluctance to change entrenched views (on any subject), irrespective of evidence, is a most exacting barrier to overcome.** A decrease in societal empathy is another.

Specialists in moral development consider empathy to be the foundation of human compassion. <http://www.euronews.com/2014/02/10/beyond-the-subconscious> <http://www.telegraph.co.uk/science/2016/05/16/unethical-amnesia-subconscious-deliberately-suppresses-memories/>

In psychodynamic theory, the concept of 'defence mechanisms', describes how people behave or think, better to distance themselves from thoughts which inhibit their feeling carefree. Normally, defense mechanisms are unconsciously deployed. **Denial**, a form of Bias, is the refusal to accept a reality or fact seen as distressing. People use Denial every day, eg, to avoid facing life issues they do not wish to. Elements of **Self-deception/-delusion** may be involved. For instance, a person who is alcoholic, may deny having a drink problem, saying to how well they function socially. There is an array of defence mechanisms (or coping styles), which we use in response to internal and external influences

http://metapsychology.mentalhelp.net/poc/view_doc.php?type=book&id=4912

The life of a mother and that of a foetus are, of course, not the same. Because the destruction of abortion does not stare us in the face, does not mean that we have not caused distress and havoc, just as real, but which we do not see or, more to the point, **do not want to see**. Appearance, taken as a guide to essence,

has a lamentable history explanatory of human selectivity, regarding about what to be concerned.

<http://www.brainfacts.org/~media/Brainfacts/Article%20Multimedia/About%20Neuroscience/Brain%20Facts%20book.ashx>,
<http://learn.genetics.utah.edu/content/cells/insidestory/> <https://moodle.kent.ac.uk/external/mod/book/view.php?id=2396&chapterid=78>
<http://now.tufts.edu/articles/tufts-receives-10-million-study-life-sciences> ; http://www.ehd.org/dev_article_unit1.php
<http://www.astirinch.com/creation/dna-genetics-evolution-is-not-the-answer/> ; <http://sciencing.com/happens-zygote-following-fertilization-20062.html>

People in authority in administrative systems, who must choose between unappealing options, often delegate to anyone who can take blame and be held responsible for the outcome. Disavowing direct responsibility, they may so set up judicial inquiries, commissions of inquiry, interdepartmental committees or call on ordinary citizens [as eg in a Citizens' Assembly] to pronounce on the matter at issue. Normally, delegates will not be aware of their true rôles. **Those who thus 'pass the buck'** are not concerned whether more capable decision-makers are employed or not.

In passing, it is worth noting a comment on RTE One, by **Colm McCarthy** (University College Dublin, Economist) when, on April 12th, 2017, he referred to a contentious public policy on water charges: "I cannot remember a single straightforward issue being so comprehensively mishandled by the political system... for many years". **Objective, honest analysis of public policies, is not often published and may be said to be hindered, eg by 'system failures'**. Ministers, public servants and media may suffer from a **Conscious Bias** (also called an **Explicit Bias**) and/or an **Unconscious Bias** (also called an **Implicit Bias**). Using **Scientific Method** to counter Bias will need intellectual discipline, open-mindedness and, **in addition, a well formed character** (incl., eg, a capacity to be honest).

<https://psychcentral.com/lib/15-common-defense-mechanisms/> ; <https://qz.com/861765/psychology-explains-why-so-many-leaders-pass-the-buck-and-who-is-really-to-blame/> ; <https://www.psychologytoday.com/blog/hide-and-seek/201508/the-psychology-self-deception>
<https://diversity.ucsf.edu/resources/unconscious-bias>

For a multilayered, reason-centred administration to legitimise its own decisions requires more than the accessibility for the citizenry and transparency in its policy deliberations. It requires that any information, which people access - on serious issues - **be seen to be evidently proofed against Bias**.

In the 1950s, Stanford University psychologist, **Leon Festinger**, showed how **neither facts, figures nor logic** can shift ingrained, pre-existing beliefs. Since then, several new discoveries, in psychology and neuroscience, have further demonstrated how inner convictions - far more than any facts - can skew our thoughts and even colour what we consider to be our most dispassionate and logical conclusions. This tendency toward so-called 'motivated reasoning' helps to explain why we can find groups so polarised over matters where evidence is unequivocal or why a social cohort can be dehumanised, demonised and done down. Objective, secular analysis is the only robust way to expose the falsehood behind existing abortion laws.

In the New Scientist, 1 April, 2017, the question of what knowledge is, is reviewed. **Knowing is more complex than believing (or, better, accepting)**. The ability to distinguish between fact and opinion is central to human progress. In a division of labour, societies have found it expedient to hide scholarship away in colleges and universities. <http://www.motherjones.com/politics/2011/03/denial-science-chris-mooney> ; <http://nyujilp.org/wp-content/uploads/2010/06/44.1-Kuo.pdf> <https://www.psychologytoday.com/blog/freedom-learn/201401/why-is-narcissism-increasing-among-young-americans> ;

Killing is facilitated, as studies show, by dehumanising the victim. The social neuroscientist, **Dr Lasana Harris**, has researched the origins of human cruelty, in the activity of the Prefrontal Cortex (PFC). The PFC activates when people interact with other people but not when they deal with inanimate objects. Harris showed volunteers photographs of people from different social groups and found that activity in their PFCs diminished when they looked at photographs of homeless people – their brains objectified the destitute.

Dr David Eagleman (Laboratory for Perception and Action, at the Baylor College of Medicine, and Head of the Center for Science and Law) has noted that **Propaganda** allows dehumanization to proceed to murder and mass atrocities and that our human wish for bonding and alliance can be inverted. As he puts it: "**There's a flip side of this drive to come together. Because for every in-group there are outsiders. And the consequences of that can be very dark.**" **Propaganda** is found in the welter of biased information from

favoured or trusted sources. Films and rhetoric, eg, reprogram people's minds until they no longer see their target as human. <http://nymag.com/scienceofus/2015/10/this-new-pbs-miniseries-will-expand-your-mind.html>

Dr Eagleman cites examples from history of 'one group turning on another', including defenceless people, who posed no threat. One of the starkest examples was the Jews in and after WW 2. Defined first as an 'out-group' and then depicted via **Propaganda** as vermin, they faced death. The same occurred to Muslims in Bosnia and the Tutsis in Rwanda, who began to be depicted as 'cockroaches' by the dominant Hutus. Over 800,000 Tutsis were slaughtered. <http://brane-space.blogspot.ie/2016/01/the-role-of-brain-in-propaganda-and.html>

Confirmation Bias is the tendency to locate and present information in support of our own established points of view, distorting how we might freely think. If a group of people value harmony and coherence, accurate analysis is eschewed: **Groupthink** demands consensus. Decades of research have proven that **Expectation (accepted for making decisions by a judge as noted in C -i] above)** is too a powerful force. Talk of 'abortion/reproductive rights' is heavily influenced by Expectation and Groupthink. Such talk from legislators, however, **decries intellect**.

<https://www.psychologytoday.com/blog/science-choice/201504/what-is-confirmation-bias>; <https://www.psychologytoday.com/basics/groupthink>
<https://www.psychologytoday.com/blog/kidding-ourselves/201404/we-see-what-we-want-see>
<http://www.science20.com/sarah-harrison/do-we-only-see-what-we-want-see-experts-dont-notice-gorilla-their-midst-116822>

The cognitive scientists, **Sloman** and **Fernbach**, show that our intelligence resides not in individual brains but in the **collective mind**. Human reasoning is itself altogether shallow - our thinking and justifications only scratch the surface of complexity. Individuals rely not only on information stored within their own heads but also on that stored, eg in other people and in the environment. At the deepest level, our thoughts do not belong individually to anyone. Whilst any one person knows relatively little, the human hive - when people work together - can be well informed. A growing number of Cognitive Psychologists are recognising a phenomenon called **Social Cognition**, comparable with the idea of a **Hive Mind** (collective intelligence). With Social Cognition, each individual mind gains a certain amount of information about a social situation - but when two minds work together, they can end up producing much more information. <https://medium.com/the-physics-arxiv-blog/how-social-psychologists-are-gathering-evidence-of-the-hive-mind-974a204427ca>

For a large number of individuals, **Swarm Intelligence** results in spontaneous, organized motion. It is observed at all scales, from bacterial colonies, Slime Molds and groups of insects to shoals of fish, flocks of birds and animal herds. Physicists **Maksym Romenskyy** and **Vladimir Lobaskin** from **University College Dublin**, Ireland, have discovered new swarm dynamics, when a swarm becomes overcrowded and the globally ordered motion breaks down. When neighbouring creatures are within one step of each other, each can no longer decide on a safe direction of motion. Instead, they become busy trying to avoid collisions. Research, on human behaviour, would be worthwhile (necessary). <http://www.cleveralgorithms.com/nature-inspired/swarm.html> ; <https://www.sciencedaily.com/releases/2013/03/130315095921.htm>

One key to an ant colony, for example, is that no one is in charge. No generals command ant warriors. No managers boss ant workers. The queen plays no rôle except to lay eggs. Half a million ants function well without any management - at least none that we should recognize. A colony relies upon an Infinity of interactions between individual ants, each following simple rules of thumb. Scientists describe such systems as **self-organizing** (as in an embryo). <http://ngm.nationalgeographic.com/2007/07/swarms/miller-text>

Prior Prejudices or Biases influence decisions: long-held beliefs are often tied to a **valued identity** or view of self, which is protected by staying in a '**Comfort Zone**'. Prejudices may be retained (as noted above) **even when they conflict with the demands of fact**, logic, or material self-interest. **Closed-mindedness** may be given up only with great reluctance. Motivational speakers variously counsel on leaving the Comfort Zone. Defective management decisions come from a poor search for and processing of information (**Selective Bias**), a lack of considering alternatives, a failure to examine the risks of the preferred choice and a **Rush to Judgment** (Janis and Mann 1977), all exacerbated by '**Anchoring**'. <http://www.medscape.com/viewarticle/839438>

The selection, interpretation and integration of information is widely subject to Bias. **Moral Relativism** uses a ‘**flexible Conscience**’ to excuse just about anything, on the basis of the ‘ethical dilemma’ that there is **no absolute good or bad**. Now what anyone thinks they see, in their own mind, to be good or bad in another is indeed beyond their ken. But to say this means people can gain no Worth or Merit, from what they do, is a weak argument: it’s just that there is no clear measure by which Worth can be judged.

<https://books.google.ie/books?id=uZGDBAAQBAJ&pg=PT64&lpg=PT64&dq=flexible+conscience&source=bl&ots=OfNl4jSZ2B&sig=DD4QtmwIN7FbFFi9eIFpLx-FWWA&hl=en&sa=X&ved=0ahUKEwiX26G58tXP4hXpIsAKHOCiDWwQ6AEIKzAC#v=onepage&q=flexible%20conscience&f=false>

In short, people often do not attend to, nor interpret information in a rational manner but show ‘Bias’ and use shortcuts in their reasoning - eg regarding stereotypes. Public debates are often characterised by the absence of good information and **by the bland lack of effort by media presenters and politicians to seek this out.**

<http://www.ncsc.org/~media/Files/PDF/Topics/Gender%20and%20Racial%20Fairness/kangIBprimer.ashx>

https://books.google.ie/books?id=RAkU4xFeMdsC&pg=PA134&lpg=PA134&dq=comfort+zone+self+concept&source=bl&ots=otKYmGHomy&sig=7B7Iv3kr7FfWC_p1jHVHyrHhYoo&hl=en&sa=X&ved=0ahUKEwiM-vfGr6LMAhXKKcAKHX_KDSIQ6AEISTAj#v=onepage&q=comfort%20zone%20self%20concept&f=false

Participants in a self-confirmation exercise wrote about a personally important value, describing experiences when it made them feel good. Later, in a debate, those who had done the self-confirmation exercise were less insistent about their own views and were more balanced in their views of speakers from both sides. Those who had not done the exercise were biased against other speakers. https://ed.stanford.edu/sites/default/files/self_defense.pdf

With **Propaganda** an attachment in people to committing murder can occur. Governments, which leave the pathway to killing open, abdicate their responsibility to people. The Irish Government are obligated, in their granting of life or sentencing to death, **openly** to proof their decisions **against Bias**. Armed with facts, one can use logic to sway an opponent. An apparently irrefutable argument can, however, be rejected. Neuroscientist **Antonio Damasio** found that whilst an argument may be presented in a logical fashion, emotion (eg for political gain) can predetermine decisions about it.

<http://bigthink.com/experts-corner/decisions-are-emotional-not-logical-the-neuroscience-behind-decision-making>

Hand-wringing about when life begins, does not sit well with the effluence of false expertise on times – legally, not naturally defined - for annulling an unwanted pregnancy, brutally and fraudulently.

Mankind would best always tread lightly and carefully, whether with regard to our ecological or carbon or any other footprint, for fear of tarnishing something unknown in the infinite wonders of our Universe.

<http://www.beinghuman.org/crime> ; <http://www.tmcnews.org/2016/02/journey-to-the-inner-cosmos/>

<http://www.ncas.rutgers.edu/center-study-genocide-conflict-resolution-and-human-rights/16th-17th-century-plantation-ireland>

<http://brane-space.blogspot.ie/2016/01/the-role-of-brain-in-propaganda-and.html> ; <http://irishhistory.blogspot.ie/2014/04/events-during-january-1972-9.html>

<http://nymag.com/scienceofus/2015/10/this-new-pbs-miniseries-will-expand-your-mind.html> ; <http://www.irle.berkeley.edu/workingpapers/128-12.pdf>

K Examples of ‘judicial Killing’. The Abortionists’ Patch.

1] Baby farms <http://radiobiafra.co/news/unspeakable-evil-in-igboland-babies-farmed-like-pigs-in-aba-for-the-child-sex-industry-some-sold-for-their-organs>

2] You may be “...just curious about medication abortion.” Parental consent may not be necessary.

<https://www.plannedparenthood.org/learn/abortion/the-abortion-pill>

3] In the US (to ensure freshness), organs were routinely harvested from ‘not-yet-dead’ patients, including children (Washington Post 18/March/2007; Medical Daily, NY, 26/Sept./2012). <http://www.thesleuthjournal.com/horror-patient-wakes-up-hospital-while-doctors-try-to-harvest-her-organs-for-transplant-profits/>

4] Unwanted female infants are routinely killed in India, China and England. Foetuses with minor imperfections, such as cleft lip or club foot, are also terminated in England for spurious reasons.

<http://www.dailymail.co.uk/news/article-2272783/Dozens-abortions-carried-foetuses-minor-imperfections-cleft-lip-club-foot.html?ito=feeds-newsxml#axzz2JvYD9IuN> ;

<http://www.dailymail.co.uk/news/article-2539648/Thousands-girls-aborted-gender-Study-finds-couples-cultures-sons-deemed-desirable-terminating-female-pregnancies.html>

5] “Abortionists... have drawn up procedures for insuring that aborted pre-born babies are either kept alive or terminated in such a manner that their organs are not destroyed in the process.”

<http://www.ewtn.com/library/PROLENC/ENCYC074.HTM>; http://www.gutenberg.us/articles/summary_execution
<http://www.ohchr.org/EN/ProfessionalInterest/Pages/ArbitraryAndSummaryExecutions.aspx>

6] Old age provides the opportunity for knowledge and life-skills to be passed on. Elderly people should be prized for the knowledge and values which they can pass on to coming generations. It has been reported that the elderly can be dispatched for reasons as trivial as freeing up hospital beds. <http://www.dailymail.co.uk/news/article-2161869/Top-doctors-chilling-claim-The-NHS-kills-130-000-elderly-patients-year.html> Different societies vary in how they look after old people. They are, however, always vulnerable. <http://newsroom.ucla.edu/stories/jared-diamond-on-aging-150571>

7] IPPF: women who want to terminate an unwanted pregnancy may have to overcome numerous challenges, not least of which is navigating legal restrictions.
<http://www.ippf.org/our-approach/services/Abortion>

8] In Iceland, 100% of women who have a positive diagnosis for Down's terminate. But these children, in other countries, can grow up to live meaningful lives. <http://www.bbc.com/news/magazine-37500189>



Addenda sunt. The Necessity of Afterthought

Unfounded statements, which imply that there is no design or Designer in Nature, is thought by many abortionists to remove all responsibility, for any sort of common, codified set of values (other than their own), in the small portion of 3-Space which they occupy. Making a brief reference to the wonders of the Universe and to how we think - will show that what is immediately around us is only a speck and, as part the awesome Infinities, our rôle and behaviour is hardly quite altogether up to us duly to choose.

Unsound, unquestioned catchphrases, used in demands to 'disappear' unwanted babies, have been looked at. Clearly, one must now ask how people think, even those of rank. There are so many psychological dispositions (at both subconscious and conscious levels) - which disallow unbiased induction and deduction – and disable intellectual discipline and open-mindedness. The mind may have get-out clauses, like Prejudice and Group-think, for excusing the less vigilant of their responsibility. Most likely, however, there is still a measure kept of us (and Plato was the first to speak of 'the measure of a man...'). Recent neuroscience and psychology reveal uncomfortable truths.

According to members of the **Geological Society of America** and to what cannot be estranged from reason, **natural processes are interconnected** at all scales, from microscopic to megascopic, from atomic to galactic. What appears to be a piece of wood will have an ordered, unknown interconnectivity, across all segments of Nature and into which Science only begins to peer. These Addenda take a glimpse at connections eg between matter and radiation, in establishing that the Universe did not have a chance beginning. Events unfold, obeying physical laws, though how and why is not known. <http://www.nature.com/news/2011/111005/full/478007a.html> ; <http://www.irishtimes.com/culture/unthinkable-how-can-scientists-disagree-on-basic-facts-1.2602178> <http://bcn.boulder.co.us/basin/local/sustain5.htm>

The following pieces {**I** and **II**} provide the background to the foregoing evidence-based analysis (**A – K**). **I**) Regarding abortion as judicial killing, a call is made for the fragile beauty of Nature, everywhere, to be celebrated, to be protected. **II**) There are three texts (at **α**, **β** & **γ** below), which concern our rôle in the Natural Order.

https://books.google.ie/books?id=7DK_DAAAQBAJ&pg=PA185&lpg=PA185&dq=retrenchment/restriction+in+thought&source=bl&ots=vPmRqbzO1Q&sig=h5cRXxbVwNpK1BsnS19lqfRS2Zs&hl=en&sa=X&ved=0ahUKEwi7uvGHo7bTAhVnBMAKHWDMAAnAQ6AEILDAD#v=onepage&q=retrenchment%20Frestriktion%20in%20thought&f=false ; <https://arxiv.org/ftp/arxiv/papers/0911/0911.0267.pdf>

α) 'Genetic Determinism' was a doctrinaire theory based on unsound assumptions about Science. There is no clockwork Universe. <http://www.irishtimes.com/culture/unthinkable-how-can-scientists-disagree-on-basic-facts-1.2602178>

β) Neuroscience and Psychology provide a good basis for examining how we think. The faculty of ‘Free Will’ has some scope - scalable in the case of altruistic and creative decisions, by open-minded, disciplined people. These may so build up Dignity and Worth.

γ) In line with Neuroscience and Psychology, Universal Harmony requires that person’s Dignity and Worth be factors in equations. Having Dignity and Worth speaks to human Purpose and the accommodation of an interacting Infinite Intelligence over the network of equations and objects in the Natural Order. To appreciate limitless Nature a little, a short and fairly simple account of recent discoveries is given in the areas of Quantum Physics and Cosmology. A study of human Purpose is beyond the scope of the present work.

I) The Beauty of Nature: Painted Ladies.

Research into the class of insects, called Butterflies, in the order Lepidoptera, has revealed that Painted Ladies undertake a phenomenal 9,000 mile round trip from tropical Africa to the Arctic Circle. As they migrate south, radar records reveal that Painted Ladies fly at an average altitude of over 1,640 feet. They can reach speeds of up to 30 mph, with favourable winds.

The whole journey is not undertaken by individual butterflies but, in a series of steps, by up to six successive generations. Painted Ladies which return to Africa in the autumn, are thus several generations removed from their ancestors, who left Africa earlier in the year. This tiny creature weighs less than a gram, has a brain the size of a pin-head and has no opportunity to learn from older, experienced individuals. Nonetheless, the animal undertakes an epic intercontinental, multigenerational migration, in order to find plants for its caterpillars to eat.

The butterflies show us, in their way, that Nature is both fragile and exceedingly powerful. We are in the middle of it all, entwined with all other creatures. We are like managers, for a short while, and what we do – or do not – in line with our fleeting responsibility to Nature – is lasting. <http://www.dailymail.co.uk/sciencetech/article-2219502/Secret-Painted-Lady-migration-habits-finally-revealed-Butterflies-undertake-epic-journeys-Africa-Arctic-SIX-GENERATIONS-complete.html>

II) How infinite is the Big Picture – microscopically and galactically?

We live, arguably, within an infinite-dimensional Reality. Universal Harmony in Nature’s Equations requires that a Balance exist, covering all factors, including human Dignity and Worth.

α) Genetic Determinism is invalid. Having Dignity and Worth requires Free Will.

-i] DNA – **-ii]** Epigenetics – **-iii]** the Microbiome – **-iv]** Reward Pathways

Scientific laws are slow to evolve. An hypothesis first becomes a theory and can then, if shown to be widely valid, be accepted as a scientific law. It is a concern that the legal profession does not appropriately integrate physical truths into interpretation of the criminal and civil law. Good laws and physical realities are not at odds with each other. Indeed, laws should reflect reality.

<http://www.news-medical.net/life-sciences/What-is-Recombinant-DNA.aspx>

-i] Living cells contain Deoxyribonucleic Acid (or DNA). It is the only molecule able to direct replication from its constituent monomers (called nucleotides). Monomers have a double helix structure and each contains a combination of the nitrogen bases: adenine, thymine, guanine and cytosine. The average length of a gene is about 1,000 nucleotides (but can go to $> 10^6$). A polynucleotide just 10 nucleotides in length could have any one of $4^{10} = 1,048,576$ different sequences. A gene of average length can exist with $4^{1,000}$ different sequences, a number greater than that of all the atoms in the Observable Universe.

The four bases are the same in all organisms but can be paired together and arranged in effectively an infinite number of ways, such that each organism has a unique combination for their own DNA strands. A

gene, a distinct portion of a cell's DNA, can encode critical genetic instructions, used during the life of all known living organisms, from conception to death. Genes are packaged in bundles called chromosomes. Humans have 23 pairs of chromosomes. Genes <http://tfscientist.hubpages.com/hub/What-is-DNA-Nucleotides-and-Information-Storage> ; <https://www.rpi.edu/dept/chem-eng/Biotech-Environ/Projects00/rdna/rdna.html> ; <https://publications.nigms.nih.gov/thenewgenetics/chapter1.html>

The human zygote nucleus contains the genetic instructions (or DNA) for making all cell types. Cells in a zygote are totipotent (can become a cell anywhere in the growing body). Their potential decreases as cell fate is determined. Cells can release embryonic signal molecules to affect target cells - regulating the expression of genes in these. This process is the way in which cells of an embryo communicate and (in infinitely complex processes not understood) facilitate cell determination and differentiation. As regards the size and shape of organs, long-range communication amongst embryonic cells controls this. Key cell-signalling molecules (morphogens) establish embryonic tissue patterns for the formation of adult structures. http://www.garlandscience.com/res/pdf/9780815365099_ch02.pdf ; <http://genetics.thetech.org/ask-a-geneticist/infinite-combination-genotypes> ; <https://publications.nigms.nih.gov/insidethecell/chapter3.html> ; <http://www.biologyreference.com/Fo-Gr/Genetic-Control-of-Development.html>

In 2008, geneticist **Carl Bruder**, of the University of Alabama, questioned the understanding that genetic differences, between identical twins, come largely from environmental influences ('nurture'). Identical twins can emerge when a zygote — the fertilized egg— splits into two. They should have identical genomes – or complete sets of genetic instructions - more than 3 billion DNA base pairs in humans. Cells which make up each growing embryo divide, over and over again. However, mistakes can occur. He found sites of genetic divergence in some twins, where one had a different number of copies of the same gene. Variations of natural occurrence are likely and increase with age. In consequence, the genome, with which a person is born, is not the genome s/he has on death. Even in early development, 359 mutations in the genomes of twins were found. Studies of twins were used for determining how much Nature influences both a child's health and personality. DNA, as a factor in personality, would need a reliable control group to study. Twins can no longer be seen as such.

<https://www.scientificamerican.com/article/identical-twins-genes-are-not-identical/> ; <http://www.smithsonianmag.com/smart-news/identical-twins-arent-so-identical-which-makes-twin-studies-harder-119107266/>

-ii] Substantive environmental effects, upon the function of genes, have been shown - for nearly twenty years - via **Epigenetics**. A person's cells all have the same DNA: there are about 350 cell types, eg neurons, fat cells, epithelial cells, liver cells and bone cells. However, groups of cells, eg in organs, differ to an extent because they have sets of genes which can be 'turned on', or 'turned off' - not by other cells in this case but by **environmental stimuli**. Some changes allow for normal development - others can allow for the onset of disease. This radical research contradicted strongly-held assumptions, by some, on **genetic determinism** {ie a mechanism by which both inherited genes and environmental conditions determined morphological and **behavioural phenotypes** (ie observable traits)}. Some epigenetic changes can be passed on to a coming generation. When a father eg did not have enough food, during a critical period in his development just before puberty, his sons were found less likely to die from cardiovascular disease.

<http://www.cam.ac.uk/research/news/epigenetic-discovery-suggests-dna-modifications-more-diverse-than-previously-thought>
<http://discovermagazine.com/2006/nov/cover>

How changes effected in people are remembered is a topic in Epigenetics. It is a new model of gene expression, being modified further and **further away from determinism and its non-scientific use**. 'Epi' (Greek) means 'above'. The meaning of 'epigenetic' is so: 'controlled above the genes'. Science has indeed taken us far beyond **Newtonian Physics**, which describes a mechanical Universe. Neither Genetics nor Epigenetics can be used for **a ready-made predetermination of how we behave**.

Genes change their expression depending upon what is happening outside our cells and even outside our bodies. Information flows from DNA to proteins and from proteins to DNA. Genes can be activated and deactivated by signals from the environment. Bacterial DNA has been found to change in response to its environment. Even primitive organisms can evolve under an infinity of stimuli. The new

scientific discipline of **Epigenetics is unravelling so much of what was taken as ‘dogma’ and rebuilding it in a more complex fashion**, taking new factors into consideration.

https://books.google.ie/books?id=KlBaDQAAQBAJ&pg=PT116&lpg=PT116&dq=Epigenetics+infinitely+complex&source=bl&ots=3AiTryMzi_&sig=OHAKoB5GfOGqeplwoFzCXH0qOJ4&hl=en&sa=X&ved=0ahUKewiJxOqc5fTSAhVmJsAKHWy1A_cQ6AEIOTAF#v=onepage&q=Epigenetics%20infinitely%20complex&f=false ; <http://www.nature.com/scitable/topicpage/Epigenetic-Influences-and-Disease-895> ; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4681781/> ; http://www.mastersconnection.com/newsletters/2014/newsletter_Aug23rd2014.html

-iii] The human **Microbiota** consists of the symbiotic microbial cells harboured by each person, primarily bacteria in the gut. The human **Microbiome** consists of the genes which these cells harbour. Humans have clusters of bacteria in different parts of the body, eg on the surface or in deep layers of skin (skin microbiota) or in the mouth (oral microbiota). Our gut microbiota contains tens of trillions of microorganisms, including at least 1,000 different species of known bacteria - with more than 3 million genes (150 times more than our human genes). Indeed, numbering anywhere from 30 trillion to 100s of trillions, our microorganisms outnumber stars in the Milky Way Galaxy. Over hundreds of millions of years, co-evolution between vertebrates and their microbes has given rise to a specialised community, which thrives, in the gut's warm, eutrophic, stable environment. Changes of dietary pattern, as a result of CNS control of food intake, can impact nutrient availability to gut microbiota and consequently on their composition. Satiation-signaling peptides are the key molecular intermediaries which enable this downward control. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4062078/> ; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3426293/> ; <http://www.scientificamerican.com/article/identical-twins-genes-are-not-identical/> ;

Genes within the human gut microbiota weigh around three pounds — like our brain — and are sometimes compared with an extra ‘organ’. They may help our digestion or affect our mood. In this latter regard, they produce a large number of neuroactive compounds. The microbes are part of a system which regulates behavior, separate from our body and consciousness. Recent investigations point to these microbes having substantive impact on our cognitive function and fundamental behavioural patterns.

These include **sophisticated social interaction and stress management** – with potential links between our gut bacteria and conditions such as anxiety, depression, schizophrenia and autism. In the absence of microbes, underlying neurochemistry is profoundly altered. Genetic influence on behaviour, once taken to be understood (not by **Research Scientists**), is now a subject of new paths of investigation.

<https://gradireland.com/careers-advice/job-descriptions/research-chemist>

<http://www.sciencedirect.com/science/article/pii/S0022395615000655> ; <https://www.bioceuticals.com.au/resource/article/how-your-gut-can-affect-your-mood>

<https://www.fastcoexist.com/3053260/9-fascinating-facts-about-the-microbiome-the-trillions-of-microbes-hidden-inside-us>

The Journal of Neuroscience, on November the 12th, 2014, noted that advances in computation were needed better to understand links between the gut microbiota and the brain. Large, highly multivariate datasets fall to be integrated. Increasingly, datasets involve time-series components. The rate of progress in the characterisation of the gut microbiome has begun to impact on the clinical domains of neuroscience. It is difficult to predict how understanding the gut microbiome will **transform insights into the human brain function**, both in health and disease, and point to greater understanding of inner neural workings.

<http://www.jneurosci.org/content/34/46/15490> ; <http://sitn.hms.harvard.edu/flash/2015/the-human-microbiome-and-media-confusion/>

-iv] The brain's **Reward Pathways** comprise a system essential both to survival (as in decision-making, risk-taking and gambling) and disorders (eg addiction and obesity). Dopaminergic neurons of the midbrain are the main source of dopamine in the mammalian CNS. Their loss causes the neurological disorder called Parkinson's Disease. Degeneration of dopaminergic neurons is most extensive in melanised neurons located in the Substantia nigra Pars compacta. (Neuromelanin is a dark pigment produced in dopaminergic neurons and has the ability to bind with a variety of metal ions, especially iron.) Post-mortem analyses of the human brain have established that oxidative stress (implicated eg in depression, anxiety disorders, schizophrenia and bipolar disorder) and iron content are enhanced following neuronal death. Although dopaminergic neurons are few, they play an important rôle in influencing several brain functions, including voluntary movement and **behavioural processes, which relate to mood**, reward, addiction, and stress. Behaviour is related to varying brain feedback - on whether anticipated rewards are as expected, better or worse - than expected.

<https://www.psychologytoday.com/blog/mouse-man/200904/what-is-dopamine> ; <http://www.jneurosci.org/content/30/42/14273> ; <http://discovery.lifemapsc.com/in-vivo-development/brain/substantia-nigra-pars-compacta> <http://onlinelibrary.wiley.com/doi/10.1046/j.1471-4159.2003.01923.x/pdf> ; <http://www.reference.md/files/D016/mD016631.html> <http://www.sciencedirect.com/science/article/pii/S1357272504003711> <https://www.ncbi.nlm.nih.gov/pubmed/15743669> <http://uk.businessinsider.com/r-work-on-brains-reward-system-wins-scientists-a-million-euro-reward-2017-3?r=US&IR=T> 6/3/2017

Dedicated research in the foregoing fields -i] – -iv] has produced challenging insights into underlying thoughts processes. Evidently, each of the four areas noted presents infinitely impenetrable complexity at the finer levels. Whilst confidence may be sometimes expressed that scientists will one day solve a challenging problem, there is no prospect of this happening when **issues faced are infinitely intricate** and our Mathematics breaks down. The idea of coordinating results, in the fields noted, does not even arise.

The Brain can be studied to any depth and from any angle. Architecture affects human behaviour, whether the environment is natural or man-made. Even a person's physical height can affect his/her emotions and state of mind. <http://covenantuniversity.edu.ng/News/Expert-Reveals-How-Architecture-Affects-Human-Behaviour#.Wa8S2u98O1s> <http://news.nationalgeographic.com/news/2014/02/140216-short-tall-height-perception-psychology-bias-science/>

The human mind in action, automatically handles what seem to be insoluble challenges in understanding innumerable chemical and electrochemical interactions. **Examining the human mind and its capacity for Free Will, a most intricate undertaking, is profitably left for a review of Psychology and Neuroscience.** <http://www.brainfacts.org/~media/Brainfacts/Article%20Multimedia/About%20Neuroscience/Brain%20Facts%20book.ashx>

β) 'Free Will' - for 300,000 years, affording Worth and Dignity.

The exercise of **Free Will** is a component in the balance in Nature. In c400 BC, **Democritus** introduced the idea of separate biological and mental processes, influenced by external stimulation. He was the first to raise the question of where biology stops and intellect begins. Around the same time, **Socrates** wrote that people are social creatures and influence one another. How free is free - if we are free? Philosophers have debated this, at length, for over two millennia. Most say that having a Free Will satisfies the metaphysical requirement for being responsible for one's actions.

<https://books.google.ie/books?id=Yz8HuBFXb6cC&pg=PA9&lpg=PA9&dq=free+will+ancient+philosopher+greek+thyself&source=bl&ots=SpgwwM7Z1e&sig=z3FS-RwMG18HBjhA201HwqnNiZU&hl=ga&sa=X&ved=0ahUKewiM9sSLi6TRAhVEJsAKHQFIC-0Q6AEIPDAG#v=onepage&q=free%20will%20ancient%20philosopher%20greek%20thyself&f=false>

The main threats to our idea of Free Will are various determinisms: physical/causal; psychological; biological; theological. For each variety of determinism, there are philosophers who (i) deny its reality, either because of the existence of Free Will or on independent grounds; (ii) accept its reality but argue for its compatibility with Free Will; or (iii) accept its reality and deny its compatibility with Free Will.

<https://plato.stanford.edu/entries/freewill/>

Causal determinism (an ontic model, reflecting a real existence) says the course of the future is determined by the past and the laws of Nature. Compatibilists believe that agents could have Free Will even if causal determinism were true, ie the existence of Free Will in a possible world is compatible with that world being deterministic. There are also at least two kinds of incompatibilists (incl. hard determinists and libertarians). That determinism be wrong is a necessary condition for Free Will. However, the indeterminism present may not be of the sort required for Free Will to exist. Pessimists agree with the incompatibilists that Free Will is not possible if determinism be true. However, they claim indeterminism undermines Free Will, rather than helping support the idea. If neither **Determinism** nor **Free Will** be accepted, we have **Pessimistic Incompatibilism**. <http://www.iep.utm.edu/freewill/>

In 1687, **Sir Isaac Newton** published his **Principia** - laws of mechanics which led to the wildly held belief, for over two centuries, that if all the laws of nature could be known, it would in principle be possible to compute the future action of every object in the Universe – ie the predetermined **Newtonian Clockwork Universe**. However, in 1886, the King of Sweden offered a prize to whomever could prove the stability of the solar system. **Henri Poincaré** had already discovered that even a system of just three interacting

bodies, evolving over time, could not be knowable exactly - let alone one which involved all the bodies in the solar system.

In Scientific American, in 2012, the work of **Benjamin Libet**, in the early 1980s, was considered. He was a neuropsychologist at the University of California, San Francisco, who discovered that a **Readiness Potential** begins before a conscious decision to act - by at least half a second. The brain thus acts before the mind decides: freedom was deflated. Research results showed that there was no conscious control of the start of an action, indicating that Free Will does not exist. Studies started by Libet contributed to **Free Will being seen as an illusion**. Recent studies, however, point to a different interpretation of the RP, namely that the apparent build-up of the brain activity preceding subjectively spontaneous voluntary movements (SVM) may reflect the ebb and flow of the background neuronal noise, variously triggered.

Libet's experiments themselves have been criticized as well as his underlying theoretical assumptions (2014). Other criticisms cover the theories of action which separate the deciding from the initiating (2006). It is said that free and conscious deliberating could still have a relevant causal rôle, long before the actual performance of the action. Other critics note that the introspective estimates of event timing are disputable or inaccurate and that measures in general were not sufficiently exact. Various authors found that internally (and perhaps stochastically – ie at random) generated neural activity could bias decisions which were expected to be stimulus-responsive or (possibly) reason-responsive.

A telling setback for determinism came in the form of '**deterministic chaos**'. While working on three mathematical equations, which characterised atmospheric motion, Edward Lorenz (a meteorologist), found that the solution predicted by his computer varied widely when starting values, differing by tiny amounts, were used. This indicated chaos. In 1972, Lorenz coined the term '**Butterfly Effect**' to denote this extreme sensitivity: the beating of a butterfly's wings creates barely perceptible ripples in the atmosphere which might ultimately alter the path of a tornado.

The Newtonian Universe was in effect ended by the quantum-mechanical **Uncertainty Principle**, formulated by **Werner Heisenberg** in 1927. In its most common interpretation, it avers that any small particle (eg an electron), cannot have both a definite position and a definite momentum at the same time. Heisenberg's Uncertainty Principle was a radical departure from classical physics, replacing certainty with uncertainty. <https://www.scientificamerican.com/article/finding-free-will/> ; <http://math.ucr.edu/home/baez/end.html>

The Heisenberg Uncertainty Principle impacted on philosophy and the ideas espoused, by some, in determinism. The Principle says that the present state of the world (or of any particle) cannot be determined with perfect precision – **because of infinite complexity**. Newtonian mathematical laws, which might have been used to predict the future from the present are inaccurate. The Uncertainty Principle introduces an irreducible indeterminacy (graininess) into the state of the world below everyday levels of observation. It is suggested that this inevitable level of graininess in the state of matter in the Universe, during the first moments of its history (the Big Bang), led to the production of irregularities which eventually evolved into galaxies. It is to be considered how, during the process of **substantiation from radiation**, matter derived (unknown) properties from **Background Radiation**. <http://math.ucr.edu/home/baez/end.html>
<http://www.encyclopedia.com/education/encyclopedias-almanacs-transcripts-and-maps/heisenbergs-uncertainty-principle>;
<http://curious.astro.cornell.edu/about-us/101-the-universe/cosmology-and-the-big-bang/general-questions/570-where-did-the-matter-in-the-universe-come-from-intermediate> <http://www.spacetimehelix.com/>

David Eagleman is a neuroscientist and adjunct associate professor at Stanford University (Department of Psychiatry and Behavioral Sciences). He is also the director of the Center for Science and Law. He observes (2012) that every step in the causal chain of action is determined by forces and conditions not of our choosing - causal pathways were laid down by ancestors and parents, culture, society and peer groups. <http://www.carterhipps.com/2012/05/02/is-free-will-a-delusion-an-evening-with-david-eagleman/>

The core question is whether some actions are 'free', independent of biology. If Free Will truly exist, it appears to have little room in which to operate. It can at best be a small factor riding on top of vast neural

networks shaped by genes and environment - because there is no meaningful distinction between biology and decision-making. Professor Eagleman, to further his argument and referring to Libet's work, instances only decisions which have expected outcomes. In an interview, he also says that to suggest neuroscientific research disproves the existence of free choice is to take a philosophical (and perhaps even a metaphysical) leap. Too little science is yet known to draw conclusions about the question of Free Will and choice. He was clear about our not being in control of our own decision-making to the degree we (may have) once thought. Determinism is an extraordinary claim in any age. **There is insufficient extraordinary evidence to make that leap.** <https://www.scientificamerican.com/article/how-free-will-collides-with-unconscious-impulses/?responsive=false> ;

Who you have the possibility to be begins at conception. However even small changes, in brain chemistry, can substantively change behaviour. Our genes and environments intertwine, influencing how we behave. Choices made are inseparably joined to neural circuitry and, therefore, the two cannot be teased apart. Genes do affect behaviour: with a particular set of genes, the probability of committing violent crime is four times higher than without them. The probability of committing robbery is three times higher and aggravated assault is five times higher. Most criminals carry these genes. Neither nature nor nurture is the main determinant of action. The complex interactions of genes and environment mean that everybody - equal before the law - possesses different perspectives, dissimilar personalities and varied capacities for decision-making. Expected behaviours, like a heartbeat or breathing, do not require Free Will. **Altruism and creative expression mark out this territory, as the individual's mind (well or not) sees it.**

<https://www.theatlantic.com/magazine/archive/2011/07/the-brain-on-trial/308520/> ; <https://www.ncbi.nlm.nih.gov/pubmed/10839048>

Decisions which arise from differing perspectives, indicate that Genes, the Microbiome, Epigenetics and Reward Pathways all have an imperceptible, perhaps complementary, part to play. There is too, worth noting, the power of self-healing by the mind, revealed by the **placebo effect**. A placebo is an inert substance which has no effect on your body. Sugar pills eg are used as controls - against which the effects of experimental drugs are measured. Placebos can produce **dopamine release** and other chemical responses, mimicking the effects of drugs: people can react to a placebo/hypnosis/ homeopathy almost as to a real drug. The placebo-effect, in which a patient believes s/he is getting an actual drug, and subsequently improves, despite receiving no active substance at all, is now well established. Placebo- or sham surgery can also produce results equal to actual surgery, even though the physical problem is not addressed. Research suggests this power of belief can be potent. It may be compared with convictions kept in the face of evidence. **In this case evidence is wished into existence.**

<http://www.health.harvard.edu/mind-and-mood/putting-the-placebo-effect-to-work>

A number of studies have shown, for example, that the brain releases natural pain-relieving substances, (endorphins), when people enrolled in pain studies are given placebos. Results indicate that measurable changes in brain chemistry may explain the large placebo effect, seen in depression treatment. Parkinson's disease is associated with a shortage of the brain chemical dopamine and, in studies of the disease, placebos have increased the production of dopamine.

<http://prograinplacebostudies.org/about/people/> ; <http://articles.mercola.com/sites/articles/archive/2016/03/12/placebo-healing-power.aspx>

It is well established that 'social information' (such as star ratings and comments) is now an important input in purchasing decisions, perhaps even more so that the one provided by suppliers or experts themselves. The placebo effect on consumers can influence consumer behaviour, depending upon the different types of 'social information' given. <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/placebo-effect> <http://www.economic-insight.com/2016/08/01/insight-placebo-effect-experimenting-consumers/>

The present and future are influenced by the past. **Alfred Whitehead** (c1870) also noted that at every moment, creativity is possible; an infinite potential for novelty exists. In every cascading occasion of experience, there is the opportunity for something new to exert its influence. He wrote: "The antecedent environment is not wholly efficacious in determining the initial phase of the occasion which springs from it." Speaking on Dublin's **Newstalk Radio** (7/1/2017), a representative from the Foundation for responsible Robotics, said that the **computations required for creative thought**, in neural computing,

were too complex for replication in computers: STEM subjects have now become the STEAM subjects – with ‘A’ standing for Arts. http://whiteheadresearch.org/occasions/conferences/event-and-decision/papers/Daniel%20Pettus_Final%20Draft.pdf

Born Creative. Kenneth Heilman and his team at the Department of Neurology and Neuroscience, at Cornell University, have discovered that the brains of **artistically creative individuals** have a particular characteristic, which could enhance creativity. The brain is divided into two hemispheres, joined by a bundle of fibres, called the Corpus Callosum. Writers, artists and musicians were found to have a smaller Corpus Callosum. This could augment creativity by allowing each side of the brain to develop a specialisation. The authors suggest that this factor benefits the incubation of ideas, critical for the divergent-thinking component of creativity.

However, this does not tell the full story: creativity is about divergent thinking but also about **generating an infinity of associations**. Recent findings suggest that the secret to this lies hard-wired in our **DNA**. Creativity is related to connectivity in large-scale brain networks, according to Szabolcs Keri of the National Institute of Psychiatry and Addictions in Budapest. Originality, fluency and flexibility relate to how well brain areas communicate. In highly creative individuals, brain connectivity is thought to be more widespread, reflecting genes which have a rôle in developing neural pathways.

<https://www.theguardian.com/science/blog/2013/sep/19/born-creative-study-brain-hemingway>

Angela J Lu, Department of Cognitive Science, University of California, explained (2013) that one area of decision-making is devoted to the study of how humans make their choices based on their own internal preferences, such as in consumer decision-making, instead of being based on sensory features or behavioral outcomes. When choosing among options which differ along multiple attribute dimensions, humans consistently exhibit unexpected preference shifts, or even reversals. A Bayesian (ie relating to or denoting statistical methods based on Bayes' theorem) model for these shifts demonstrates that contextual effects can arise as rational consequences of three assumptions: 1) humans make preferential choices based on relative values (anchored with respect to ‘fair market value’), inferred from both prior experience and the current set of available options; 2) different attributes are imperfect substitutes for one another, so that one unit of a scarce attribute is more valuable than one unit of an abundant one; and 3) uncertainty in beliefs about ‘market conditions’ induces stochasticity in relative preference, on repeated encounters with the same set of options. This model provides a principled explanation for why specific types of contextual modulation of preference choice exist. **An infinite number** of calculations is implicit in exposition of the theory. http://www.cogsci.ucsd.edu/~ajyu/Papers/springer_DM.pdf

Consumer Psychology aims to understand how individuals evaluate products/events. Evaluations are driven both by the quality and desirability of an object and by several less central factors. Construal level theory (CLT) is a recent framework (2007) which links distance and abstraction. It suggests that psychological distance is an important determinant of whether primary, essential characteristics or secondary, peripheral characteristics are used as the basis of prediction, evaluation and behaviour (ie respectively using either a high-level or low-level construal). Different dimensions of psychological distance (time, space, social distance, and hypotheticality) affect mental construals.

People use concrete, low-level construals to represent near products/events and abstract, high-level construals to represent distant events. Low-level construals contain subordinate and incidental features: high-level construals are schematic, decontextualized representations, extracting the gist of information available - achieving abstraction by omitting secondary/incidental features. In any case, the dimensions of psychological distance are determinants relevant to the psychology of consumer decision-making.

Predictions based on low-level construals in this multi-stage, multidimensional analysis and how they are calculated, lead to an infinite number of possibilities. If a decision to purchase be acted upon, in short order, then the brain has side-stepped the chaos of **an Infinity of probabilistic calculations** {an epistemic (relating to knowledge) model}. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3150814/>

Jameel Al-Khalili OBE (إجميل صادق الخليلي), Professor of Theoretical Physics at the University of Surrey considered determinism, randomness and predictability in 'Free Will'. In 2013, he set out four options:

- i) Determinism is true so all actions are predictable: 'Free Will' is just an illusion (Newtonian);
- ii) Determinism is true but so is Free Will;
- iii) Determinism is false; there is built-in randomness to the Universe allowing room for Free Will; and Determinism is false but we still haven't Free Will as events happen randomly and we have no more control over them than we would if they were predetermined.

Our brain consists of networks of 100 bn neurons, linked together via 100 tns of synapses – in essence a hugely complicated machine, which runs the equivalent of computer software, albeit involving complexity and interconnections far beyond anything which could be imagined. Neurons consist of atoms which obey the laws of physics, as understood, throughout the (Visible) Universe. Were i) the position of each atom in our brains known, ii) what it was doing at any time and iii) were the rules which govern how it interacts with other atoms understood fully, the state of our brains, at any time in the future, could theoretically be forecast. That is, provided of course, there is no interacting with the outside world. If this happened, everything about it also would have to be known [although by this time we should be deep into the territory of unknown unknowns].

Were it not therefore for probabilistic quantum rules, according to which atoms behave, we should have to admit, had we limitless calculating capacity, that we too are part of Newton's Clockwork, Deterministic Universe. Professor Al-Khalili does not address quantum mechanics but considers chaos theory more useful. If the future be fixed, it would only be knowable if the whole of space and time could be studied from the outside. But human consciousness is imbedded within space-time, so the future is never knowable. Unpredictability provides an open future of **infinitely many choices**. Because of the Butterfly Effect, tiny changes brought about by our different decisions could lead to infinitely many different outcomes. <http://www.jimal-khalili.com/blogs/2016/9/7/do-we-have-free-will-a-physicists-perspective>

Andrea Lavazza is a scholar of cognitive sciences, a philosopher and research fellow at Centro Universitario Internazionale (Arezzo, Italy). He asks how freedom is possible, in a world ruled by physical determinism. Reflections on Free Will have been confined to philosophy, until half a century ago, when neuroscience entered the field. The first relevant and now well-known strand of research on the brain correlates of Free Will was that pioneered by Libet et al. (1983). This focused on the allegedly unconscious intentions taking place in decision-making, as noted above.

<http://journal.frontiersin.org/article/10.3389/fnhum.2016.00262/full> 6/2016

How can unconscious brain processes possibly know in advance what decision a person is going to make at a time when they are not yet sure themselves? Formerly, the existence of preparatory brain processes has been regarded as evidence of 'determinism'.

In conjunction with **Professor Dr Benjamin Blankertz** and **Matthias Schultze-Kraft** from the Technische Universität Berlin, a team of researchers from Charité's Bernstein Center for Computational Neuroscience, took a fresh look at the issue. Using state-of-the-art measurement techniques, the researchers tested whether people are able to stop planned movements once the RP for a movement is triggered. Decisions were found not to be controlled by unconscious, early brain waves: subjects can intervene in the decision-making process, interrupting a movement.

<https://www.sciencedaily.com/releases/2016/01/160104130826.htm> 1/2016 <https://www.psychologytoday.com/blog/memory-medic/201606/free-will-is-not-illusion> 2/2016 <http://optimal.org/voss/freewill.html> 1/2016

The stochastic models and the models of evidence accumulation consider decision as the crossing of a threshold of activity, in specific brain regions. These models do not restore the idea of conscious control but turn away from determinism. They cannot explain how the intention to perform an action arises in the brain – though account better for the complexity of the process. In particular, they recognise the rôle of

spontaneous activity in the brain, of external cues and other factors - including those which might be called 'will' and 'reason' (which do not, as yet, have well identified neural correlates) - in reaching a critical threshold. Studies which show how movements, the preparation for which has begun unconsciously, can consciously be blocked - and indicate how a subject is able to exercise a form of control (the genesis of which however is still unclear).

Free decision-making, it appears, draws upon a rich history of accumulated information, manifested in preferences, attitudes and motivations and is related to the current internal and external environment. Absence of [potentially infinitely complex] context is impossible. (Bode et al., 2014). In this framework, Dr Lavazza proposes initial integration of neuroscientific research on Free Will - through psychological operationalisation (in terms of skills and cognitive functions): this does not necessarily imply a continuous conscious control over the decision-making and action process. However, the procedure may permit the setting up of a (rudimentary) quantitative index, of the degree of freedom each subject experiences. As this **freedom would be technically defined**, it would not coincide with the intuitive concept of Free Will.

The index of **Free Will now** proposed (2015), further to be developed, should be useful to explore brain mechanisms, which underlie what appears in behaviour as **'Free Will', no longer to be regarded as an 'illusion'**. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4887467/> 10/2016

Along with 'Free Will', is the question of consciousness. One of the big stumbling blocks to answering how the brain generates this is that neuroscience arguably has lacked a cohesive framework for linking micro and macro events in the brain. This is changing through an increasingly accepted concept called 'neuronal assemblies'. These can be defined as large-scale, highly transient coalitions of brain cells, which link local events in single cells with large-scale events in macro brain regions. Because these anomalies can be highly variable in time, **Susan Greenfield** has suggested that they could be correlated with variable degrees of consciousness. <http://www.susangreenfield.com/science/consciousness/>

γ) Reason in scientific Discovery. The Infinite-dimensional Reality.

With the fundamental factors of existence stretching to infinity, a human limitation on any one of them (for the sake of a lack, eg of imagination) might be taken up elsewhere. Both the balance in Nature's equations, as may be noted, and the nicely intertwining of the infinite Complexities of an infinite-dimensional Universe, reflect an Agency, perforce an Infinite Intelligence – for the purpose of maintaining, in perfection, Structure, Laws and Life. 'Infinite' implies, inter alia multa, that time (in our terms) stretches back forever. 'Infinity' is not humanly comprehensible. Not only cannot our intellectual reach embrace an infinite-dimensional Reality but - as has become clear – even our descriptive language is totally defective.

<http://postbiota.org/pipermail/tt/2012-February/010670.html>
https://books.google.ie/books?hl=en&lr=&id=6YMYDQAAQBAJ&oi=fnd&pg=PT24&dq='defective+language'+encompass+meaning&ots=JZtGB-sxSM&sig=FDx5viHpJeR5ftBRq95UX2V14kw&redir_esc=y#v=onepage&q&f=false ; <http://www.maths.ed.ac.uk/~igordon/LA1.pdf>

Axiomatically, if, for one thing, the likes of humankind had no 'Free Will', what allows the Universe to become conscious of itself and it's awesome purpose, would be null. As a capacity for independent action is, however, established, the issue remains to fit human Worth and Dignity into the vista presented. A common principle, of beauty, in all Nature is Harmony. Things balance out. When Dirac visited Moscow in 1956, he wrote "A physical law must possess mathematical beauty." Mathematics is often said to be a part of Physics: an experimental science which discovers for mankind 'the most important and simple laws of Nature'. ['Simple' being a relative term.] <http://www.mi.sanu.ac.rs/vismath/stakhov2013new/origins.pdf>

Brian Cox, Professor of Particle Physics at the University of Manchester said, regarding inflationary cosmology: "There may have been more than one Big Bang and, probably, there is an infinite number of universes being created all the time." [A deduction, based upon Reason, of an infinite-dimensional Universe.] He deals with the prospect of infinitely many calculations presented by his work all the time.

He reasons that there is the involvement of a Higher Power, which powers Nature – also deduced from considerations in this work - and called the Infinite Intelligence.

Science relies on both **direct evidence and reason** in establishing discoveries. There has been a shift away from things observed, in natural or experimental settings, to concentrating instead on the logic of observation. Theory correctly predicts the existence of subatomic particles and Dark Matter. **Vera Rubin** (Carnegie Institution), as reported in *New Scientist – The Collection, Vol. 4 Issue 1 (January 2017)*, measured the Doppler shift in clouds of hydrogen in several distant galaxies, showing that the speed at which these orbited the centre of the galaxies required more mass than the visible matter presented. The discrepancy between the amount of visible matter and the strength of gravity was explained by assuming the presence of invisible **Dark Matter**. Without this, furthermore, the existence of many stable galaxies would be thought to defy the laws of Physics. The term ‘Dark Matter’ means that we do not understand it.

Otherwise, Harvard graduate student **Sarah Ballard** and her colleagues, in the *Astrophysical Journal*, (September, 2011) revealed the discovery of an invisible planet orbiting a star about 650 light-years from Earth, in the constellation Lyra. Its presence was revealed by its gravitational pull on another planet — a planet which itself can be detected only indirectly.

Hubble's Space Telescope Imaging Spectrograph (July 2013) measured changes in the colour of light from a planet, orbiting another star, 63 light-years away - before, during and after a pass behind the star. A small drop in the light observed and a slight change in the colour of the light occurred. The light became less bright in the blue but not in the green or red – ie light was missing in the blue but not in the red, when the planet was hidden. The object which disappeared was therefore blue {the colour not coming from water (Wien's Law)}. These are examples of discovery without direct evidence. [\[The stock-in-trade claim of atheists that God does not exists because of a lack of evidence, as perceived by them, does not hold water.\]](https://www.nasa.gov/content/nasa-hubble-finds-a-true-blue-planet) <https://www.nasa.gov/content/nasa-hubble-finds-a-true-blue-planet> . <http://www.thejournal.ie/nasa-new-planets-3253525-Feb2017/> ; <https://plato.stanford.edu/entries/science-theory-observation/>

Free Thinking has Boundaries: One is quite free to compose views on the value of life, if no moral or ethical code be accepted. As personal and societal codes vary, however, one might do well to think independently. In 2013, a pre-human species of hominid (**Homo naledi**) was found in the Rising Star caves in South Africa's Setswana district. The positioning of bone fragments from the Dinaledi and now the Lesedi Chamber suggest ritual (the idea of Worth and life valued) - thought unique to modern humans. Researchers from University of the Witwatersrand and the University of Wisconsin-Madison, and from elsewhere, dated **Homo naledi** fossils from the Dinaledi Chamber. They were shown, in 2017, to have been deposited between about 236,000 and 335,000 years ago, placing them in the later Middle Pleistocene and throwing light on the development of modern man. <https://elifesciences.org/content/6/e24234>

In *Scientific American MIND*, Spring 2017, **Heather Pringle** examines human creativity – when our ancestors began to think outside the box. She found that the origins of this **seemingly infinite capacity** to create indeed preceded the time of Homo Sapiens, 200,000 years ago. Creativity, however, did not take off in Africa and Europe until fuelled by biological and social factors, including increasing brain power and population. Linguist **Johanna Nichols** (University of California, Berkeley) had argued in 1998 that vocal languages must have begun diversifying in humans c100,000 years ago. <https://www.ucl.ac.uk/mace-lab/media/commentaries/files/pringle2hp>

Archaeologist **Lyn Wadley** (University of the Witwatersrand, Johannesburg) has researched ancient cognition. She excavated at Sibudu Cave, north of Durban and found what looked like bedding, but could have been windswept leaves. In 2011, she and her colleagues could report in *Science* that, 77,000 years ago, the cave occupants had, in fact, selected leaves from just one woody species (*Cryptocarya*

woodii) for bedding - indicating sophisticated knowledge of local vegetation. The leaves contained natural insecticides and larvicides. **Creativity** is inherent in the idea of Self-worth and Dignity.

<https://books.google.ie/books?id=DSsPDQAAQBAJ&pg=PT100&lpg=PT100&dq=creativity+dignity&source=bl&ots=vk2C42GE9A&sig=zIrvBjVTIO1s5MErjmNAFQSORo&hl=ga&sa=X&ved=0ahUKewiF2IbR7JLTahVrCsAKHOnHDesQ6AEIUDAN#v=onepage&q=creativity%20dignity&f=false>

Scientists can (in some form) describe **but not explain** natural characteristics, like personal Worth – or Gravity. An apple may be observed to fall: the exact pull on it (to an infinity of decimal points) is utterly critical to planetary motion. Without the prospect of getting an answer, one may ask eg **why** this force, of the many interacting ones about which we know, is maintained like this, with such effort and such ease?

<https://www.ft.com/content/68ee3ad0-57af-11e5-97e9-7f0bf5e7177b> ;

<http://anth.la.psu.edu/research/research-labs/jablonski-lab/books/diversification-of-language>

Thinking freely has Boundaries: Whatever about Hominids, Man has always a sense of ‘good and bad’ and wondered or, by especial choice, not wondered. Pervasive balance in the Harmony of Nature, eg regarding our Worth, requires this to be summed up (once it can no longer be added to or deducted from) – as the statement of the Essence of the physical person. Discoveries and deductions, which establish a basis for Free Will, a prerequisite for establishing personal Essence – the sum total of our Worth, follows in Section γ. This idea of essence, somewhat analogously, has been used elsewhere: Quintessence is theorized to be a new type of energy field or fluid in space or perhaps a fifth fundamental force. Unlike Einstein’s cosmological constant (or Λ , the value of the energy-density of the vacuum of space), quintessence would be dynamic. It could even switch from an attractive to a repulsive force.

<http://www.skyandtelescope.com/astronomy-resources/dark-energy/>

Given to Parkinson’s patients, Parmipexole can lead to compulsive gambling - **what** we do is influenced by an environmental and evolutionary imperative. **How** we do it reflects our individual human Worth. This is related to vast, undetermined workings in our neural networks. In these – and at lower subatomic levels – infinite complexities imply a need for subjectivity in gauging Worth: “one man’s meat is another man’s poison”. Quantum particles exist, eg at points of no diameter. They even occupy multiple places at once (are ‘entangled’). Shape-shifting particles change their mass, splitting and being combined, with other particles, to make up more than the sum of the parts. [$1+1 \neq 2$ always, so $\Rightarrow$ festina lente.] We can (with some difficulty) try to measure an individual’s standing before objective laws **but not judge** his/her subjective Worth.

<https://phys.org/news/2015-06-strange-behavior-quantum-particles-parallel.html> ; <http://www.jneurosci.org/content/30/42/14273>

<http://news.nationalgeographic.com/news/2014/08/140827-quantum-imaging-cats-undetected-photon-science/> ;

<https://www.newscientist.com/article/mg23130900-600-lessons-in-reality-from-particles-that-dont-exist/> ; <http://www.reference.md/files/D016/mD016631.html>

<https://www.psychologytoday.com/blog/mouse-man/200904/what-is-dopamine>; <https://www.ncbi.nlm.nih.gov/pubmed/15743669>

<http://onlinelibrary.wiley.com/doi/10.1046/j.1471-4159.2003.01923.x/pdf> ; <http://www.sciencedirect.com/science/article/pii/S1357272504003711>

<http://uk.businessinsider.com/r-work-on-brains-reward-system-wins-scientists-a-million-euro-reward-2017-3?r=US&IR=T> 6/3/2017

The sheer enormity of the brain’s capacity was demonstrated (2012) by a bioengineer and a geneticist at Harvard’s Wyss Institute. They successfully stored 5.5 petabits of data — around 700 terabytes — in one gram of DNA, a thousand times more than previously attained.

The work, carried out by George Church and Sri Kosuri, regarded DNA as any other digital storage device. Instead of binary data being encoded as magnetic regions, on a hard-drive platter, strands of DNA which could store 96 bits were synthesized, with each of the bases (TGAC) representing a binary value (T and G = 1, A and C = 0). To read the data stored in the DNA, it was sequenced — as in sequencing the human genome — with each of the TGAC bases then converted back into binary.

700 terabytes of data equals 14,000 50-gigabyte Blu-ray discs. To store as much data on hard drives — the densest storage medium — 233 3TB drives would be needed, weighing a total of 151 kilos. These dimensions again show that man’s understanding of even what is in his head does not encompass the Physics involved. <https://www.extremetech.com/extreme/134672-harvard-cracks-dna-storage-crams-700-terabytes-of-data-into-a-single-gram>

Just thinking has Boundaries: 13.7 billion years ago, from 10^{-43} to 10^{-36} seconds following the Big Bang, the Universe entered the Grand Unification Epoch, when the earliest elementary particles (and

antiparticles) appeared. In the next instant, with **cosmic inflation**, the Universe underwent a rapid, exponential expansion. A hot, dense quark-gluon plasma of elementary particles, which remained after this, was distributed across the Universe. In the Quark Epoch, 10^{-12} to 10^{-6} seconds from the beginning, quarks, electrons and neutrinos formed and the Universe cooled to below 10 quadrillion degrees.

http://www.physicsoftheuniverse.com/topics_bigbang_timeline.html ; <http://www.historyoftheuniverse.com/?p=quarkEpoch.htm>

Quarks and antiquarks annihilated each other upon contact but a surplus of quarks (about one for every billion pairs) survived, ultimately forming matter. Temperatures fell to c3,000 degrees (the temperature of the Sun). Protons (which comprise two up-quarks and one down-quark) captured electrons, neutralizing their electric charge. With electrons now bound to atoms, the Universe became transparent to light. Gravity amplified slight irregularities in the density of regions of primordial gas. They became more and more dense, even as the Universe continued rapidly to expand. The small, dense clouds of cosmic gas collapsed under their own gravity, becoming hot enough to trigger nuclear fusion, so forming the first stars.

Beyond Boundaries: Each of the estimated 100 bn Galaxies contains 100s of bns of Stars, of varying composition. In the dense, hot (15m°C) and complex early stellar conditions, Hydrogen and Helium came about. In dying Stars – Red Giants – the energy released by nuclear reaction opposed stellar collapse under gravity. With Hydrogen all gone, the inevitable collapse raised temperatures to 100m°C, allowing Carbon to form. Then, at even higher temperatures (for shorter periods), nuclear reactions formed other elements. [Betelgeuse is a Red Star where the physics of energy-in and energy-out confounds analysis.] It takes 46 bn light years to reach the edge of the Visible Universe. <https://www.scientificamerican.com/article/the-first-stars-in-the-un/> ; <http://www.universetoday.com/30305/how-many-galaxies-in-the-universe/> ; <http://www.space.com/31693-dying-star-betelgeuse-puzzles-astronomers.html>

About 73% of all matter is Hydrogen and 25% Helium: the remaining 2% makes up the rest of the Visible Universe. **Dark Matter** (over 3/4 of all matter) is invisible, without an apparent source. The mass-energy equivalents are Dark Matter 28%, **Dark Energy** 68% and Visible Matter 5% of the Universe. Dark Matter reacts to gravity, causing galactic structures to form. Dark Energy causes galaxies to fly apart towards Critical Density, after which the Universe cannot collapse back on itself in a Big Crunch. Rather will it continue until galaxies are alone in Space - unless Dark Energy changes, in the opposite way to when, 6 bn years ago, the rate of expansion increased. The term ‘Dark Energy’ means that we do not understand it.

Dark Matter and Black Holes may have a connection.

<http://www2.lbl.gov/abc/wallchart/chapters/10/0.html> ; http://file.scirp.org/Html/14-4500191_36524.htm

On May 24, 2016, **NASA** announced a new study, which supports the idea that Dark Matter might be made of Black Holes. Black Holes are places in which gravity is so great that even light cannot escape. They can be made when the centre of a very big star falls in upon itself, as when the star is dying. They are generally **primordial**, formed in the first fraction of a second after the **Big Bang** (when pressures and temperatures were extremely high). Tiny fluctuations in the density of matter throughout space somehow pocked the early Universe with Black Holes. They remained, as the Universe expanded, until our time. NASA astrophysicist **Alexander Kashlinsky**, has theorised that all galaxies are embedded within a vast zone of Black Holes - each c30 times the Sun’s mass. In 2005, his team explored the infrared background glow in one area of the sky. Observed patchiness was thought to be caused by aggregation of the Universe’s the first sources of illumination - more than 13 bn years ago – possibly including primordial Black Holes. <https://www.nasa.gov/audience/forstudents/k-4/stories/nasa-knows/what-is-a-black-hole-k4.html>

Coincidentally, observations - in different areas of the sky - found that the cosmic infrared background (CIB) had similar unexpected patchiness. In 2013, both the cosmic X-ray background and the infrared background were compared - in the one area of the sky. The irregular glow of low-energy X-rays in the cosmic X-ray background matched the patchiness of the infrared background. The only object which can be sufficiently luminous for this - across this wide an energy range - is a Black Hole.

Kashlinsky has argued that primordial Black Holes make up Dark Matter, thought to pervade our Universe. Firstly, there is the patchiness in the observed background glow of infrared light. Secondly - on

September 14, 2015 (now marked in **the history of Science**) - information came to hand that primordial Black Holes do make up Dark Matter, when scientists at the Laser Interferometer Gravitational-Wave Observatory (**LIGO**) in Hanford, Washington, and Livingston, Louisiana made a first-ever detection of gravitational waves.

Two merging, primordial Black Holes, 1.3 bn light-years away, are thought to have produced the waves - moving at the speed of light - ripples in the fabric of Space-time. LIGO had made the first direct detection of the merger of Black Holes. In *The Astrophysical Journal Letters* (May 24, 2016), Kashlinsky analyses what might have happened, if indeed Dark Matter consisted of Black Holes, similar to those detected by LIGO. He concludes that Black Holes distorted the distribution of mass in the early Universe, adding a small fluctuation - which had consequences hundreds of millions of years later - as stars first formed.

During the Universe's first 500m years, normal matter remained too hot to coalesce into stars. Dark Matter was unaffected by the high temperature because, whatever it is, it primarily interacts through gravity. **A)** Aggregating by mutual attraction, **Dark Matter** first collapsed into clumps called **Minihaloes** - providing a gravitational seed and enabling normal matter to accumulate. **B)** Hot gas collapsed toward the Minihaloes, resulting in pockets of gas dense enough further to collapse into the **first stars**. **C)** If Black Holes do indeed play a part in Dark Matter, the process could occur more rapidly – still producing the lumpiness of the infrared background detected - even if only a few Minihaloes actually produce stars. **D)** As cosmic gas fell into the Minihaloes, the constituent Black Holes of these would also capture some of it.

Matter falling toward a Black Hole would heat up and ultimately produce **X-rays**. Black Holes can account both for the observed agreement between the patchiness of background **infrared light from the first stars** and the cosmic X-ray background **from gas falling into Dark Matter**. Primordial Black Holes may happen to pass close enough gravitationally to be brought into binary systems. The Black Holes in each of these binaries will, over æons, emit **gravitational radiation**, lose orbital energy and spiral inward, ultimately merging into a larger Black Hole, like the event which LIGO observed. QED

<https://phys.org/news/2015-08-dark-energy.html> ; <https://scitechdaily.com/dark-matter-influences-supermassive-black-hole-growth/>

In March, 2017, **Dublin City University's Dr John Regan** and his team are thought to have found good evidence for one particular theory on the formation of **supermassive Black Holes**. The theory is that they rapidly accumulated mass, during the early formation of the Universe, as molecular hydrogen cooled and deflated primordial plasmas of hydrogen and helium - to form stars and galaxies.

Supermassive Black Holes should not easily form in this environment. However, a 2008 study suggested that radiation from a massive neighbouring galaxy could cause a nascent Black Hole and its **host galaxy** to collapse, rather than make new clusters of stars. In *Nature Astronomy*, 2017, Regan's computer simulations show, if a nearby galaxy emits enough radiation to switch off its capacity to form stars, that a Black Hole can grow rapidly at the centre of its host galaxy. With this capacity disabled, the host galaxy grows until eventually collapsing, to make a supermassive Black Hole, which swallows everything – including dying stars and other Black Holes. <https://www.siliconrepublic.com/innovation/supermassive-black-holes-origin> <https://phys.org/news/2015-02-dark-growth-supermassive-black-holes.html> ; <https://sputniknews.com/environment/201608301044777329-milky-way-supermassive-black-hole/>

When matter and **antimatter** come into contact, the two opposing particles neutralize and cancel each other electrically, with the release of their entire energy. Antimatter is insignificant by its volume in the Universe. Several theories have been put forward to account for this. The work of **Roland Weiss Clopton** calls for particular attention.

Clopton explains that antimatter provides a clue concerning the nature of particle physics. Antimatter has an accepted alternative definition: 'normal matter moving **backwards in time**'. That definition is infrequently used: it is difficult to imagine reverse time-flow. The space-time helix (STH) establishes the speed of light and a direction for the flow of time. Time, in its basic standard, is simply the crest-to-crest

passage of the STH as it flows through a plane of detection. Time flows only one way because the helix has a standard pitch, like threads on a metal screw. The STH is pliable, stretchable, and the outer helix can be compressed or expanded to accept modulation. Time re-normalizes at each paired node (atom) so the Universe shares a more or less common time base, and the STH waveform maintains a more or less common pitch and shape. <http://www.spacetimehelix.com/#T24>

Personal Boundaries: The atoms in your, the reader's body, date from a few seconds after the beginning of time and – indeed – your being (and its reasoning capacity) was **inherent in the original radiation** and what, ad infinitum, may have gone before this. You are the evolution of an infinite set of unfathomable complexities, the result of infinitely detailed composition, under an infinitely complex web of laws, where everything is an interrelated, intricate, essential part of overall existence. Insofar as any part of the motion of a clock is as necessary as any other, we too are part of an infinite array, and so mathematically of infinite consequence (in our terms): we have a $0/\infty\%$ of being products of chance events. Our knowledge of Nature cannot handle the Infinities which surround and penetrate us, whilst it serves us tolerably well within our limited purview. Such knowledge and the reach of the limitless Universe are not properly conflated.

In around a billion years' time, our Sun will exhaust its nuclear fuel. The core will collapse and the outer layers expand from the resulting heat – enveloping Planet Earth. In 6 billion years, the Sun will explode. With the death of all stars, indeed, the Cosmos will enter an eternal night. After the Age of Starlight, only the faint glow of White Dwarves will illuminate a dark and empty Void, littered with dead stars and Black Holes. By this point the Universe will be a hundred-trillion years old.

Black dwarves are White dwarves which have become so cold that they barely emit any heat or light. Black dwarves are thus dark, dense decaying balls of degenerate matter, little more than the ashes of stars. With the Black Dwarves gone, there will be no matter. All that will remain will be particles of light and Black Holes. After an unimaginable length of time, even the Black Holes will evaporate. In **around ten thousand trillion trillion trillion trillion trillion trillion trillion years - one Googol year** - the Universe will be an infinite, sparse scattering of photons, which gradually die out, at absolute zero.

Perhaps this calculable life of the Universe will impart a glimpse into Infinity which has been of central importance in this paper. When someone says "I am an atheist" he/she turns their back on a stunning Infinity, looking in vain for **evidence of a deity**, the existence of which can actually be deduced by Reason. Professor Cox explains that life, as we know it, is only possible for one thousandth of a billion billion billion billion billion billion billion billionth of a % of the lifespan of the Universe - ie life is only possible for a hundred trillion years. There is much invested in all of Humankind. Within the Infinity, we have a place. If a beggar recognises you, that is fine. If a king recognises you, that is important. If the Infinite Infinity recognizes you, your standing and responsibility reach infinite levels. <http://www.althinking.com/2011/03/13/professor-brian-cox-wonders-of-the-universe-destiny/>

If a Black Hole were to swallow anyone, they would be torn apart by the immense gravity, in a process sometimes called spaghettification. Eventually, they would reach the core – the Singularity- where the gravitational field is so strong that their atomic structure would collapse. General relativity provides no basis for working out what happens where density is beyond measure. "When you reach the Singularity, in General Relativity, Physics just stops - the equations break down," says Abhay Ashtekar of Pennsylvania State University. <https://www.newscientist.com/article/dn23611-quantum-gravity-takes-singularity-out-of-black-holes/>

The laws of probability, addition and subtraction, such as we may understand them, cannot be applied to any inevitability in overarching design by the **Infinite Intelligence**. A further point to deduce is that, being a product of this Infinity, the reader (as noted) has an infinite importance. In consequence, he/she

would well most carefully adduce, algorithmically to be assessed, aspects his/her life. Our knowledge of Nature's laws is (you will now infer) quite limited, as our boundaries do not take us next, nigh or near to any Infinity. Thousands of years and scientific careers and many thousands of volumes of abstruse Mathematics, Physics and Chemistry have brought us to where we are in this story, the very start of its first chapter. <http://content.time.com/time/health/article/0,8599,2092448,00.html> ; <http://www.businessinsider.com/t-rufft-infinity-is-the-enemy-2014-3?IR=T> ; <http://www.sosmath.com/calculus/limcon/limcon04/limcon04.html>

Breaching the Boundaries: Finally, regarding Mankind's purpose, using human logic eg to speak of 'cause and effect' to elaborate a point, is to pit limited capacity against limitless unknowns. The best we can do is look at realities and react. Whilst comforting, it is invalid to say our Worth is proportionate to our intellectual capacity and efforts to gain understanding of '*why*'. It is valid to say that we are infinitely important but what this means is beyond us. It would be unthinkable for the Infinite Intelligence not to afford such opportunity to sentient beings as they need to understand, according to their lights, that they have a rôle.

Rationally, we might say that persistent human interest in Worth runs parallel with a segment of unknown Reality, which we reasonably deem to exist. Our ultimate, lasting Essence, reflecting our totalled Worth and Dignity, is a sum (somehow defined) not time- or number-related. This fundamental factor will be in a Reality - opaque now to human view – within the Infinite Intelligence.

We may, with reason, so infer that, in a manner utterly unknown and unknowable to our imaginations and minds, **our existence will continue** in some manner after the terrestrial phase - when time will be no more but existence continue to 'be'. Nature is fragile, beautiful and yet everlasting, in some manner, and infinite. We are, let us say it again, infinitely important: as we arise under the laws of the Universe, kept in existence by the Infinite Intelligence. What we do or do not do is, in consequence, important to us. It would be the best we can do to follow the track ahead, bringing joy into the forest of life and always trudging on.
